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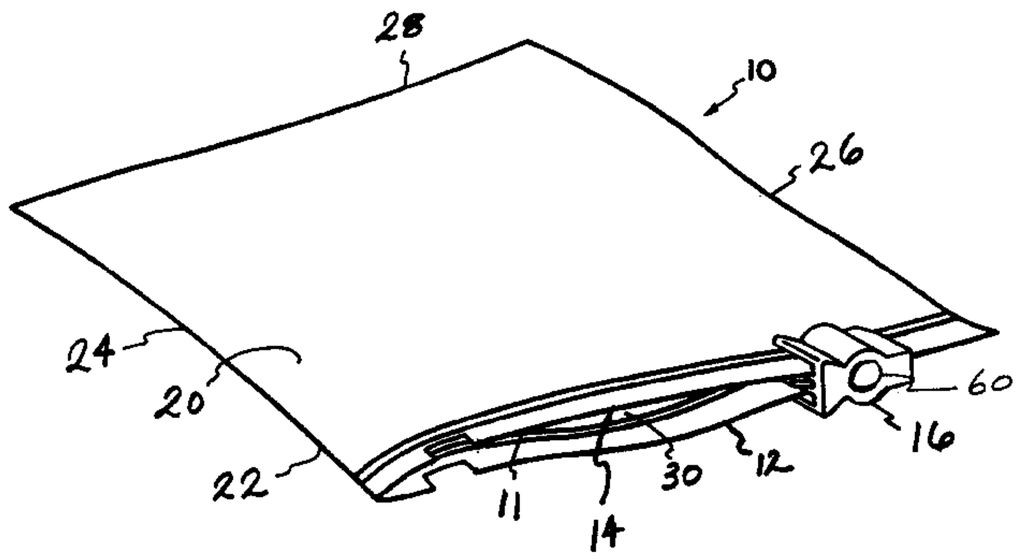
(54) **FERMETURE LATERALE A CURSEUR DOTEE D'UNE BANDE INVIOLABLE, ET METHODES DE FERMETURE**

(54) **SIDE CLOSURE ARRANGEMENT WITH SLIDER DEVICE HAVING A TAMPER EVIDENT STRIP, AND METHODS**



(57) A flexible package includes a recloseable zipper closure along the mouth of the package for selective opening and closing of the mouth. The zipper closure includes first and second mating closure profiles that are configured and constructed to selectively interlock. A slider device is mounted on the zipper closure to facilitate the mating (closing) and unmating (opening) of the mating closure profiles. A tamper evident seal is provided between the zipper closure and the package interior to indicate whether the seal on the package has been damaged or the interior of the package has been breached. The tamper evident seal blocks access to the package interior even if the zipper is opened. To gain access to the package interior, the tamper evident seal must be broken.

Abstract

A flexible package includes a recloseable zipper closure along the mouth of the package for selective opening and closing of the mouth. The zipper closure includes first and second mating closure profiles that are configured and constructed to selectively interlock. A slider device is mounted on the zipper closure to facilitate the mating (closing) and unmating (opening) of the mating closure profiles. A tamper evident seal is provided between the zipper closure and the package interior to indicate whether the seal on the package has been damaged or the interior of the package has been breached. The tamper evident seal blocks access to the package interior even if the zipper is opened. To gain access to the package interior, the tamper evident seal must be broken.

SIDE CLOSURE ARRANGEMENT WITH SLIDER DEVICE HAVING A TAMPER EVIDENT STRIP, AND METHODS

Field of the Disclosure

The present disclosure generally relates to closure arrangements for packages. In particular, the present disclosure relates to closure arrangements having recloseable profiles and slider devices to open and close the profiles.

Background

Many packaging applications use resealable containers to store various types of articles and materials. These packages may be used to store and ship food products, non-food consumer goods, medical supplies, waste materials, and many other articles. Slider devices have been used to help open and close closure profiles on recloseable and/or resealable bags and other packages.

Resealable packages are convenient in that they can be closed and resealed after the initial opening to preserve the enclosed contents. The need to locate a storage container for the unused portion of the products in the package is thus avoided. As such, providing products in resealable packages appreciably enhances the marketability of those products.

Some perishable goods are sold to consumers packaged in a recloseable bag or package. For example, cheese, meat or vegetable products can be packaged in a bag with recloseable closure profiles so that after opening the package, the package can be re-closed. Often these packages include tamper evident features to inform the consumer whether the package previously has been opened. Because of the construction of these packages with recloseable closure profiles, it has been difficult to place a tamper evident feature on a bag or package that has a slider device used to help open and close the recloseable closure profiles.

Improvements in packages, which include tamper evident features and easily recloseable seals, are desirable.

Summary of the Disclosure

The present disclosure relates to a package, such as a flexible bag, having a paneled structure that includes a combination of a resealable, recloseable zipper closure mechanism and a tamper evident seal. The zipper closure mechanism is attached to a panel of the package structure, such as a side panel. Opening and closing of the zipper closure mechanism is accomplished by a slider device operably mounted on the zipper closure mechanism. The slider device facilitates mating and unmating the first and second profile members of the zipper closure. A tamper evident seal is positioned between the package interior and the zipper. Access to the interior of the package cannot be gained until the tamper evident seal has been broken or otherwise breached.

In particular, the present disclosure relates to a package comprising a package structure having at least two side panels and a mouth, the mouth providing access to the package interior. A recloseable zipper closure at the mouth selectively opens and closes the mouth to gain or restrict access to the interior. The zipper closure has first and second mating closure profiles that selectively interlock to provide a seal. A slider device facilitates opening and closing of the zipper closure to control access to the mouth and the package interior. Positioned between the package interior and recloseable zipper closure, and extending across the mouth of the package, is a tamper evident seal. In order to gain access to the package interior, the tamper evident seal must be broken, penetrated, or otherwise breached.

A method of constructing a package, and opening a package is also provided.

Brief Description of the Drawings

FIG. 1 is a schematic, cross-sectional view of a flexible, recloseable package having a zipper closure arrangement and a slider device positioned at a side panel of the package structure;

FIG. 2 is an enlarged, schematic, cross-sectional view of the zipper closure arrangement and slider device depicted in FIG. 1;

FIG. 3 is an enlarged, schematic, cross-sectional view of the zipper closure arrangement depicted in FIGS. 1 and 2;

FIG. 4 is a cross-sectional view of a first embodiment of a flexible, recloseable package having a zipper closure arrangement, a slider device, and a tamper evident seal at a side panel, according to the principles of this invention; and

FIG. 5 is a cross-sectional view of a second embodiment of a flexible, recloseable package having a closure arrangement, a slider device, and a tamper evident seal at a side panel, according to the principles of this invention.

Detailed Description

Attention is directed to FIG. 1, which illustrates an example of a packaging arrangement in the form of a resealable, flexible package 10 having a zipper closure arrangement 11 and a slider device 16 to open and close the zipper closure 11. Zipper closure arrangement 11 is shown located in a side panel of package 10.

The flexible package 10 is defined by a surrounding structure that includes first and second opposed panel sections 20, 22 made from a flexible, polymeric film. The surrounding structure, in particular, first and second panel sections 20, 22, defines an interior 25 of package 10. For some manufacturing applications, the first and second panel sections 20, 22 are heat-sealed together along two edges (not shown) and meet at a bottom edge 28 in order to form a three-edged containment section for a product within the interior 25 of the package 10. Alternatively, two separate panel sections 20, 22 of polymeric film may be used and heat-sealed together along the two edges (not shown) and at the bottom edge 28. In these two embodiments described, side panel 20 may be folded over to create a top edge 26 of package 10, or, another panel (not shown) may be provided that is attached to panel 20 at top edge 26 and to zipper closure 11 to provide a portion of package 10. Regardless of the construction of package 10, access is provided to the interior 25 of the package 10 through a mouth 30.

Mouth 30 and zipper closure 11 are positioned between top edge 26 and bottom edge 28; as shown in FIG. 1, mouth 30 and zipper closure 11 are closer to

top edge 26 than to bottom edge 28. In alternate embodiments, mouth 30 and zipper closure 11 can be closer to bottom edge 28, or can be equally spaced between the two edges 26, 28.

The bottom of package 10 may include pleats 24 to allow expansion of package 10 in width; such a pleated area is commonly referred to as a "gusset". Although in FIG. 1 bottom edge 28 is not shown as the lowest most point of package 10, it would be if pleats 24 were unfolded and package 10 were extended.

FIG. 2 is an enlarged view of zipper closure 11 with slider device 16 mounted thereon; the zipper closure 11 positioned in side panel 22 of package 10. FIG. 3 is an enlarged view of zipper closure 11 without slider device 16 mounted thereon and without being incorporated within package 10. The zipper closure 11 can include a variety of configurations and structures. For example, the zipper closure 11 can be constructed according to U.S. Patent Nos. 4,240,241; 4,246,288; or 4,437,293; each of which is incorporated by reference herein. The particular zipper closure 11 shown in FIGS. 2 and 3 has first and second closure profiles 12, 14 in the form of a first profile member 32 and second profile member 34. The first profile member 32 has a first depending fin or flange 42 extending from a first profile member element 36, and the second profile member 34 has a second depending fin or flange 44 extending from a second profile member element 38. If the zipper closure 11 is formed separately from the panel sections 20, 22 (FIGS. 1 and 2), the first and second fins 42, 44 are attached, typically thermally fused, to a surface of the respective first and second panel sections 20, 22, either on the exterior surfaces 20a, 22a (FIG. 1) or interior surfaces 20b, 22b (FIG. 1). Alternatively, the zipper closure 11 may be extruded with the panel sections 20, 22 such that the first fin 42 is integrally formed with the first panel section 20, and the second fin 44 is integrally formed with the second panel section 22. By the term "integrally", it is meant that the structure between the panel section and the fin is continuous; there is no break between the two.

Referring again to FIGS. 1 and 2, slider device 16, mounted on zipper closure 11, opens and closes zipper closure 11; specifically, slider device 16 unmates and mates first and second closure profiles 12, 14 (FIG. 2). When slid in a first

direction (for example, up out of the page as drawn), slider device 16 closes, engages, or mates profiles 12, 14 by pressing the two profiles 12, 14 together; in particular, slider device 16 presses first profile member 32 and second profile member 34 (illustrated in FIG. 3) together so that they engage and mesh, providing a seal. When slid in an opposite second direction (for example, down into the page as drawn), slider device 16 opens, disengages, or unmates profiles 12, 14 by providing a wedge between the two profiles 12, 14. First and second closure profiles 12, 14 can then be spread apart to provide access to the package interior 25 through the package mouth 30. Slider devices and how they function to open and close zipper closures, in general, are taught, for example, in U.S. Patent Nos. 5,063,644; 5,301,394; 5,442,837, and 5,664,229, each of which is incorporated by reference herein. A preferred slider device is taught in U.S. patent applications 09/365,215 and 29/108,657, both filed July 30, 1999 and incorporated herein by reference in their entirety.

Slider device 16, according to the principles of this invention, mounts over first and second closure profiles 12, 14 and is configured and constructed to open and close the profiles in generally the same manner as conventional slider devices.

In accordance with certain principles of this invention, a tamper evident seal is provided to evidence whether or not the recloseable package has been previously opened and access gained to the interior of the package. By "tamper evident", it is meant that an attempt to breach the integrity of a seal is evidenced or shown by a distortion or destruction of the seal. FIGS. 4 and 5 illustrate examples of packages 10', 10", respectively, each having a tamper evident seal.

In particular, package 10' of FIG. 4 has tamper evident seal 50 positioned over and across mouth 30', so that access to the interior 25' of package 10' cannot be gained through mouth 30' unless tamper evident seal 50 is disturbed. It will be appreciated that when tamper evident seal 50 is undisturbed (that is, seal 50 has not been breached), zipper closure 11' may be opened and first and second closure profiles 12', 14' spread apart; however, tamper evident seal 50 will restrict access to the package interior 25'. Tamper evident seal 50 is positioned between zipper

closure 11' and the package interior 25'; tamper evident seal 50 is internal to zipper closure 11'. Similarly, package 10" of FIG. 5 has tamper evident seal 50' positioned over and across mouth 30", so that access to the interior 25" of package 10" cannot be gained through mouth 30" unless tamper evident seal 50' is disturbed. Tamper evident seal 50' is positioned between zipper closure 11" and the package interior 25".

Although zipper closure 11', 11" and tamper evident seal 50, 50' are shown positioned on a side of package 10', 10" in both FIGS. 4 and 5, it will be appreciated that zipper closure 11', 11" and tamper evident seal 50, 50' may be placed at any position on package 10', 10", such as at top edge 26', 26", bottom edge 28', 28", or at various positions on either side panel 20', 20", 22', 22". In some embodiments, it may be desired to position zipper closure 11', 11" approximately 25% of the distance from top edge 26', 26" and bottom edge 28', 28". In another embodiment, zipper closure 11', 11" may be positioned equally between top edge 26', 26" and bottom edge 28', 28".

No matter where zipper closure 11', 11" is positioned on package 10', 10", tamper evident seal 50, 50' preferably extends from panel 20', 20" to panel 22', 22" across mouth 30', 30" and provides a seal that does not allow opening of package 10', 10" at that point. It is possible to release or unmate first closure profile 12 (FIGS. 2 and 3) from second closure profile 14 (i.e., open or unzip the zipper closure 11); however, tamper evident seal 50, 50' remains intact and retains the security of the contents of the package 10', 10" by not permitting package 10', 10" to be opened and access gained to the interior 25', 25". Preferably, tamper evident seal 50, 50' extends the entire width of package 10', 10", that is, the entire length of zipper closure 11', 11".

Tamper evident seal 50, 50' may be made from any material that is sufficiently flexible to move with flexible package 10', 10". Tamper evident seal 50, 50' may be made from materials such as metal (for example, aluminum foil), paper, or cloth, but is preferably made from a polymeric material, such as an extruded polymeric material.

Tamper evident seal 50, 50' is attached across mouth 30', 30" in package 10', 10" and spans any distance between first and second side panels 20', 20" and 22', 22". Tamper evident seal 50, 50' is positioned between zipper closure 11', 11" and the package interior 25', 25". Tamper evident seal 50, 50' may be attached to package 10', 10" by any method that provides a permanent adherence of tamper evident seal 50, 50' across mouth 30', 30". If tamper evident seal 50, 50' is made from a polymeric material, the polymeric piece that results in tamper evident seal 50 may be formed integral with either side panel 20', 22', such as shown in FIG. 4, or, tamper evident seal 50' may be an individual piece attached across mouth 30", such as shown in FIG. 5.

Referring now to package 10' of FIG. 4, package 10' comprises side panels 20', 22' sealed at side edges (not shown) and at at least one of top edge 26' and bottom edge 28' to provide a package 10' having an interior volume 25'. Second side panel 22' has exterior surface 22a' and interior surface 22b'. If side panels 20', 22' are formed from a single polymeric film piece, in addition to the side edge seals, a seal is made at one end, either top edge 26' or bottom edge 28', to define interior 25'. In another embodiment, two individual polymeric film side panels 20', 22' may be used and sealed at both top edge 26' and bottom edge 28'. The resulting package is completely enclosed, with no access to the interior 25' of the package 10'. A zipper closure 11' with slider device 16' mounted thereon is attached to the exterior surface 22a' of side panel 22', as seen in FIG. 4. The slider device 16' may be mounted on zipper closure 11' before or after attaching zipper closure 11' to panel section 22'. The first and second fins 42', 44' of zipper closure 11' are attached, for example thermally fused, to the exterior surface 22a' of the panel section 22'. Mouth 30' of package 10' would provide access to the interior 25' of package 10' if panel section 22' had a passage through it; this portion of panel section 22' blocking mouth 30' functions as tamper evident seal 50. In this embodiment, tamper evident seal 50 is considered integral with panel section 22'.

Referring now to package 10" of FIG. 5, package 10" comprises side panels 20", 22" sealed at side edges (not shown) and at bottom edge 28" to provide a package 10" having an interior volume 25". Second side panel 22" has exterior

surface 22a" and internal surface 22b". Top edge 26" of package 10" is provided by folding over side panel 20". If side panels 20", 22" are formed from a single polymeric film piece, no seal, other than the side edge seals, is made at either top edge 26" or bottom edge 28"; rather, the package structure is formed from the single polymeric film piece. In another embodiment, two individual polymeric film side panels 20", 22" may be used and sealed at either top edge 26" or bottom edge 28". Similarly, three individual polymeric film pieces may be used and sealed as appropriate. The resulting package has a gap 33 between side panels 20", 22" where no extension of either panel is present; if no zipper closure 11" or tamper evident seal 50' was present, gap 33 would provide access to the interior 25" of the package through gap 33. The gap 33, however, is sealed by zipper closure 11" attached to side panels 20", 22", as seen in FIG. 5. The first and second fins 42", 44" of zipper closure 11" are attached, for example thermally fused, to the interior surface 22b" of the panel sections 20", 22", respectively, so as to close gap 33. A tamper evident seal 50' is attached to fins 42", 44" to provide a seal across mouth 30". In some embodiments it may be preferable to attach tamper evident seal 50' to zipper closure 11" (particularly, to first and second fins 42", 44") prior to attaching zipper closure 11" to panel sections 20", 22". Mouth 30" of package 10" would provide access to the interior 25" of the package if tamper evident seal 50' were not present.

When flexible package 10', 10", having a zipper closure 11 with a tamper evident seal 50, is ready to be opened by the purchaser of the package, slider device 16 is slid in the proper direction so as to open zipper closure 11. First and second closure profiles 12, 14 (FIGS. 2 and 3) are separated to provide access to tamper evident seal 50 positioned across mouth 30 of package 10. Tamper evident seal 50 is broken and access is gained to the package interior 25. By the term "break" or "broken", any action such as slitting, puncturing, cutting, slicing, perforating, and the like which breaches tamper evident seal 50 and allows access to the interior 25 of the package, is intended.

Tamper evident seal 50 may be broken by any of a variety of methods. For example, the opener of the package could use a knife, scissors, or other type of blade to cut or slit tamper evident seal 50. A tear-strip or zip-strip could be included

with tamper evident seal 50 so that seal 50 can be quickly broken. A tear strip, or the like, typically comprises a string, thread, tape or other such strip either embedded in or attached to the seal surface; when the strip is pulled, the seal is broken. Yet further, tamper evident seal 50 could include a perforation, score-line, a length of weakness, or the like along its length to allow easy tearing of seal 50.

Tamper evident seal 50, no matter how constructed or applied, should provide a seal across mouth 30 so that any attempted access to the interior 25 of package 10 is readily discernible. Preferably, tamper evident seal 50 extends the entire width of package 10, that is, the entire length of zipper closure 11.

The above specification and examples are believed to provide a complete description of the manufacture and use of particular embodiments of the disclosure. Many embodiments of the disclosure can be made without departing from the spirit and scope of the disclosure.

I CLAIM:

1. A package comprising:

(a) a package structure comprising:

(i) a first side panel and a second side panel defining a top edge and a bottom edge;

(ii) a mouth positioned within one of said first side panel and said second side panel between said top edge and said bottom edge;

(iii) said mouth providing access to a package interior;

(b) a recloseable zipper closure extending along said mouth for selective opening and closing of said mouth; said zipper closure including first and second mating closure profiles;

(i) said first and second mating closure members configured and constructed to selectively interlock;

(c) a tamper evident seal positioned on said surrounding structure between said package interior and said zipper closure, said tamper evident seal extending across at least a portion of said mouth; and

(d) a slider device operably mounted on said zipper closure, said slider device configured and constructed to selectively open and close said zipper closure across said mouth.

2. A package according to claim 1, wherein said tamper evident seal is integral with at least one of said first and second side panels.

3. A package according to claim 1, wherein said tamper evident seal comprises a polymeric material.

4. A package according to claim 1, wherein said tamper evident seal includes a tear strip.

5. A package according to claim 1, wherein said zipper closure is spaced closer to said top edge than said bottom edge of said package structure.

6. A package according to claim 1, wherein said zipper closure is attached to an interior surface of said first and second side panels.

7. A package according to claim 1, wherein said zipper closure is attached to an exterior surface of said first and second side panels.

8. A package according to claim 7, wherein said tamper evident seal is a portion of one of said first and second side panels.

9. A method of opening a package, the package having an interior defined by a first side panel and a second side panel, and comprising a zipper closure positioned in one of the first side panel and the second side panel having first and second mating closure profiles, a slider device operably mounted on the zipper closure, and a tamper evident seal positioned between the zipper closure and the interior, the method comprising:

(a) moving the slider device along the zipper closure to open the zipper closure by unmating the first and second mating closure profiles;

(b) separating the first and second closure profiles;

(c) breaching the tamper evident seal; and

(d) gaining access to the package interior.

10. The method according to claim 9, wherein the step of breaching the tamper evident seal comprises:

(a) breaching the tamper evident seal by pulling a tear strip.

11. The method according to claim 9, wherein the step of moving the slider device along the zipper closure to open the zipper closure by unmating the first and second mating closure profiles comprises:

(a) moving the slider device along the zipper closure which is located closer to a package top edge than a package bottom edge.

12. A method of constructing a reclosable package comprising:

(a) providing a first panel section and a second panel section;

(b) defining an interior by:

(i) connecting the first panel section and the second panel section at a first side edge and a second side edge;

(ii) forming a top edge and a bottom edge;

(c) incorporating a zipper closure in one of the first panel section and the second panel section;

(d) providing a tamper evident seal between the zipper closure and the interior; and

(e) mounting a slider device on the zipper closure.

13. The method according to claim 12, wherein the step of providing a first panel section and a second panel section comprises:

(a) providing a single web of material.

14. The method according to claim 13, wherein the step of forming a top edge and a bottom edge to define an interior comprises:

(a) folding the single web of material to form a fold at the top edge, and

(b) sealing the single web of material to form a bottom edge.

15. The method according to claim 12, wherein the step of providing a tamper evident seal between the zipper closure and the interior comprises:

(a) providing a tamper evident seal which is integral with one of the first panel section and the second panel section.

16. The method according to claim 12, wherein the step of forming a top edge and a bottom edge comprises:

(a) forming a top edge and a bottom edge comprising a bottom gusset.

17. The method according to claim 12, wherein the step of incorporating a zipper closure in one of the first panel section and the second panel section comprises:

(a) incorporating a zipper closure in one of the first panel section and the second panel section closure to the top edge than the bottom edge.

FIG. 1

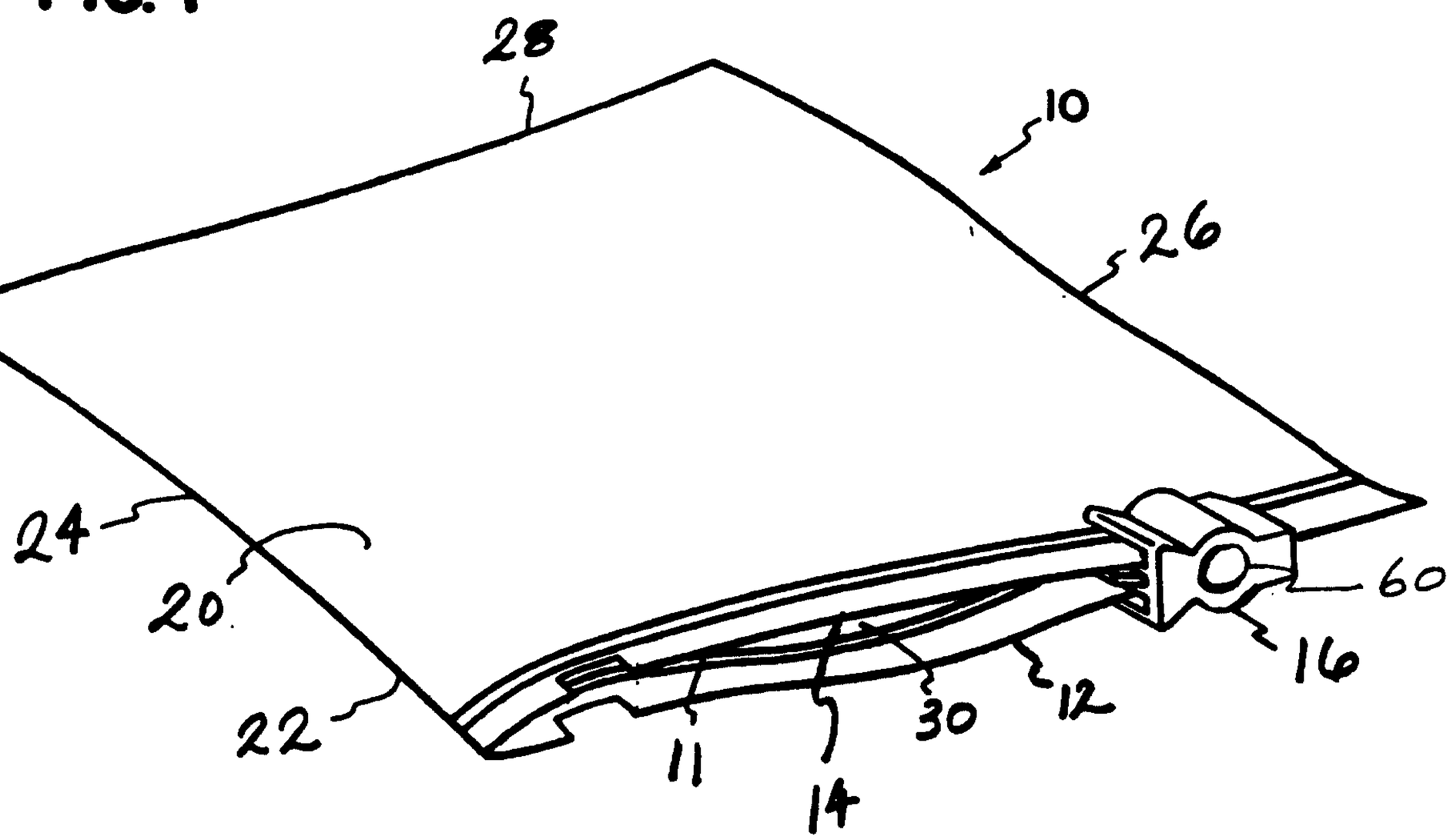


FIG. 2

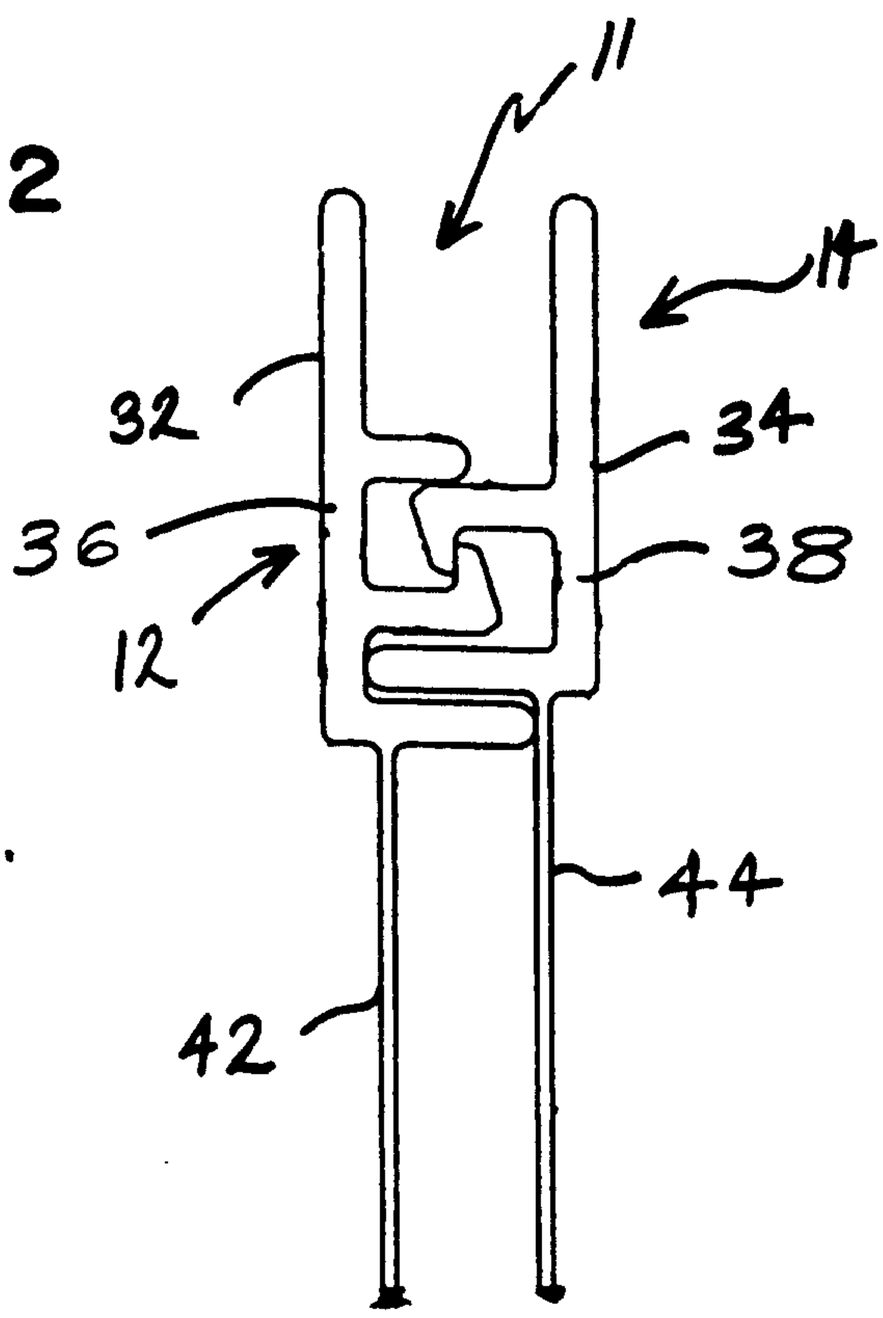


FIG. 3

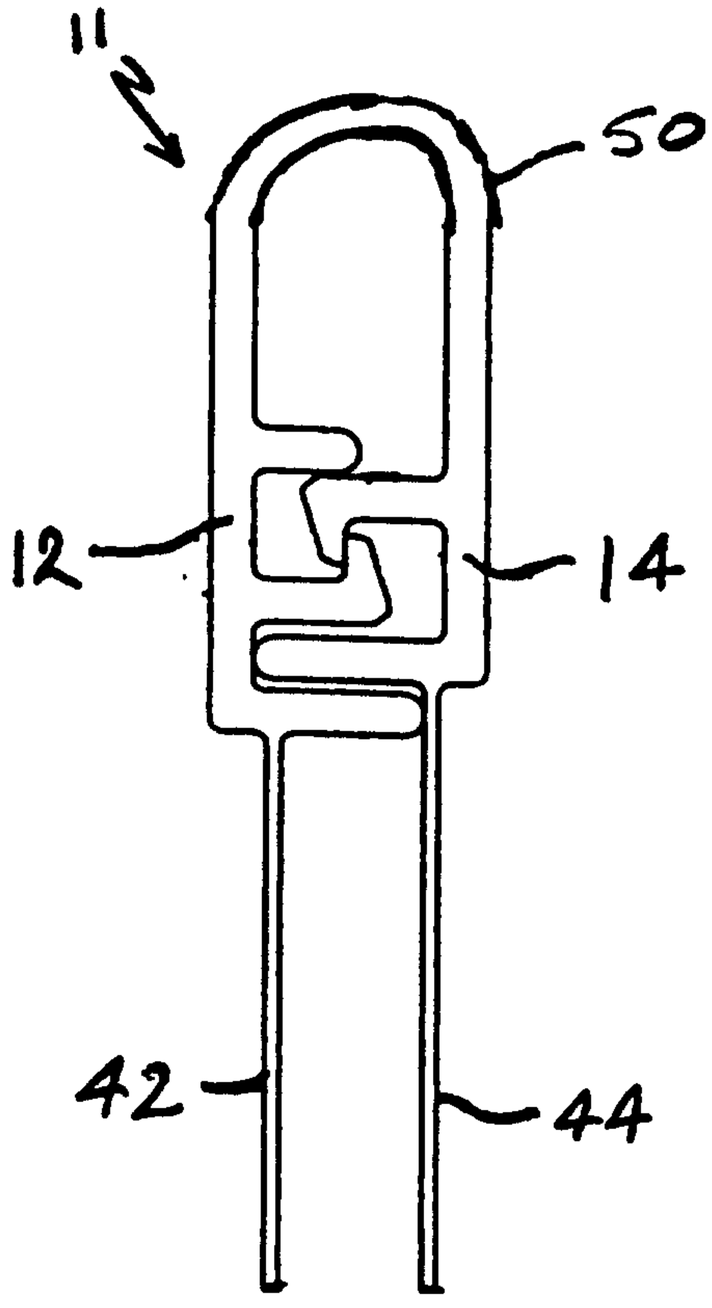


FIG. 4

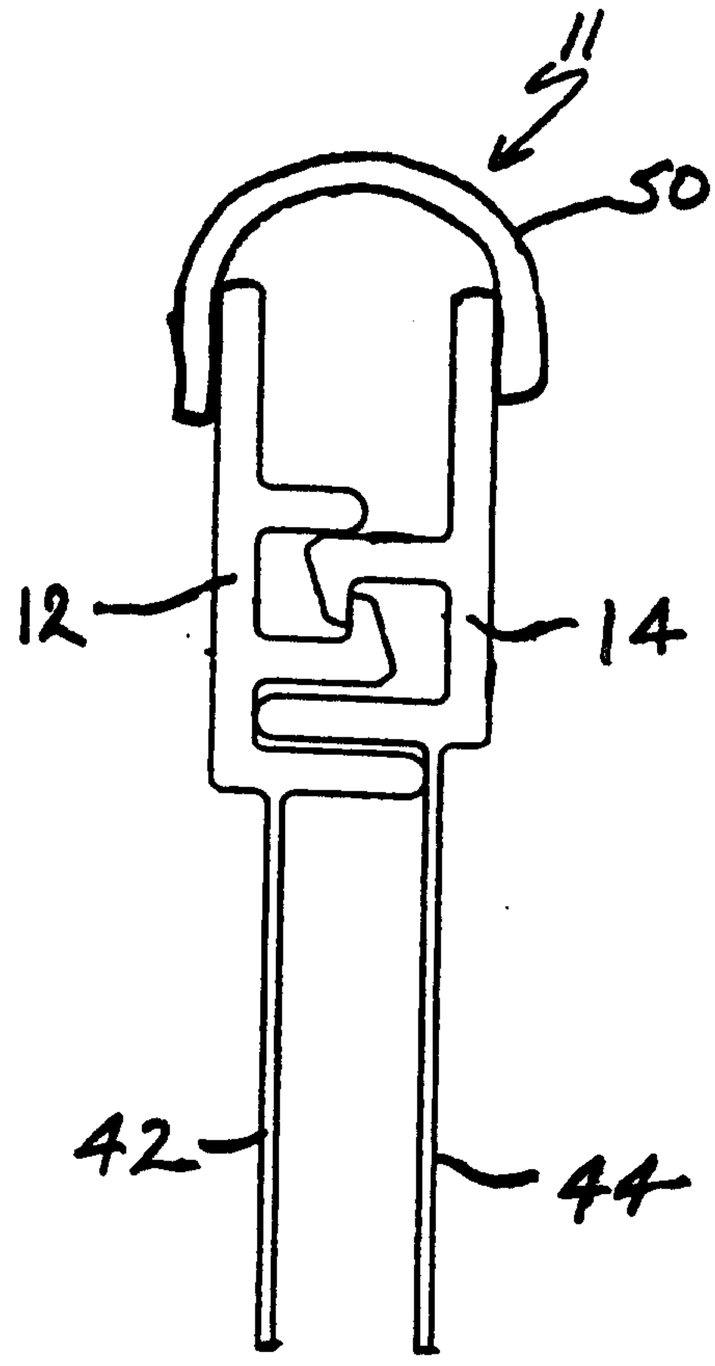


FIG. 5

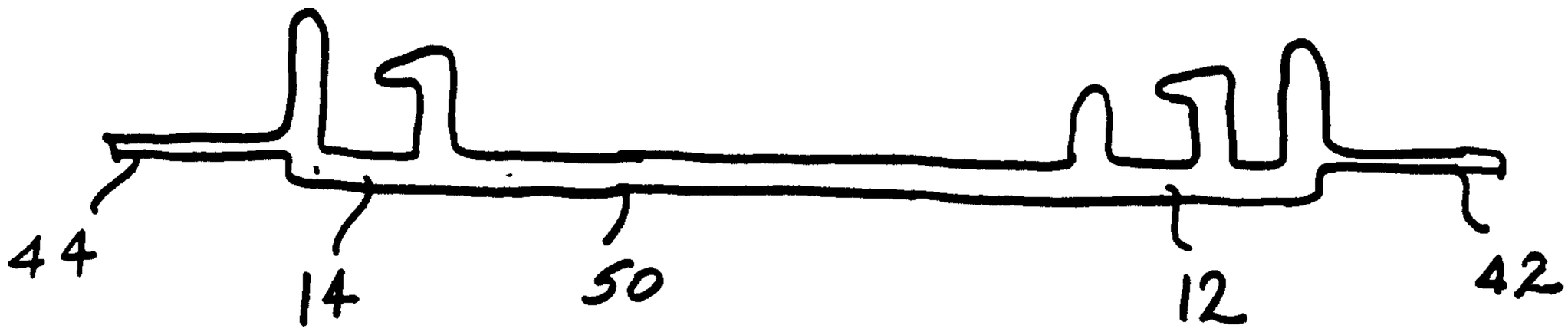


FIG. 6

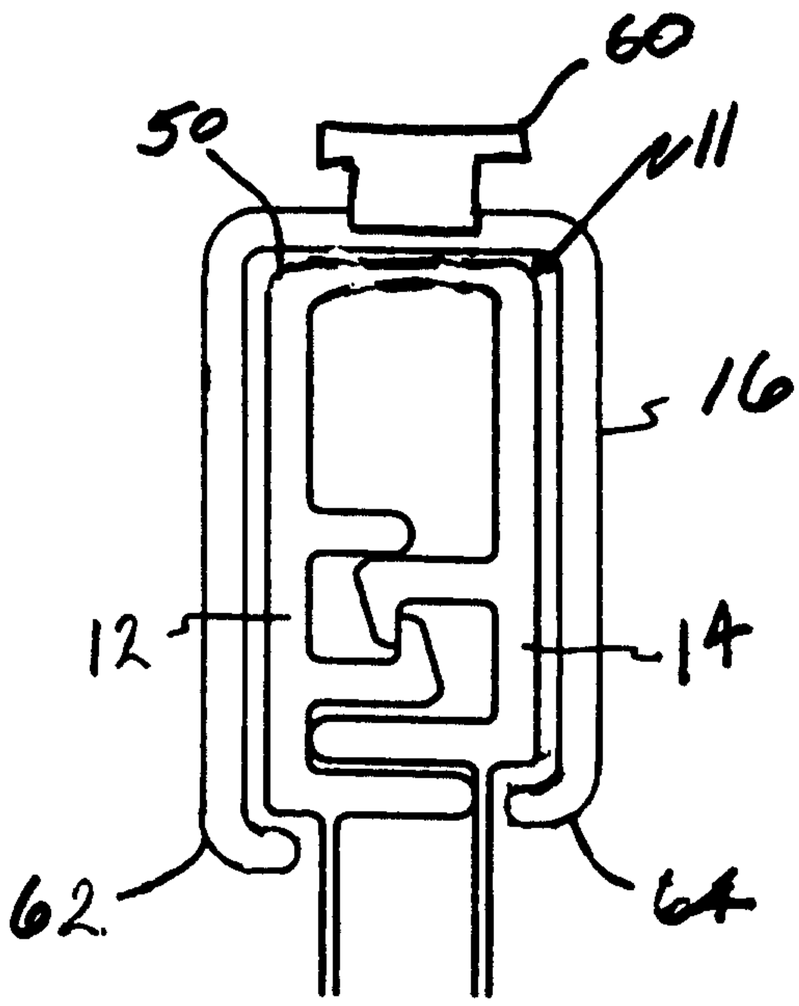
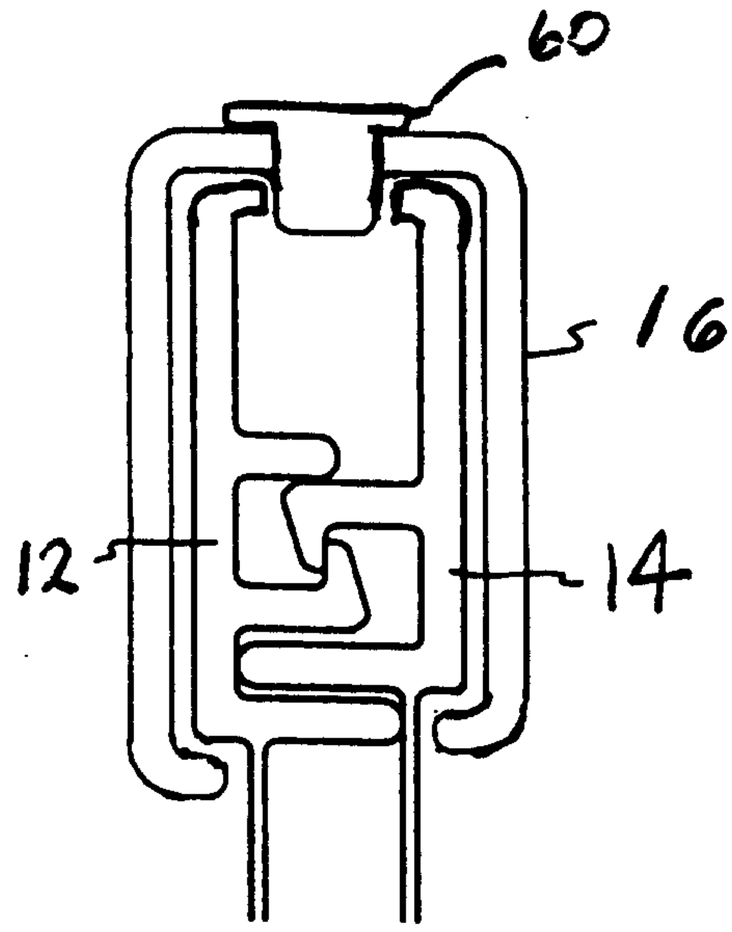


FIG. 7



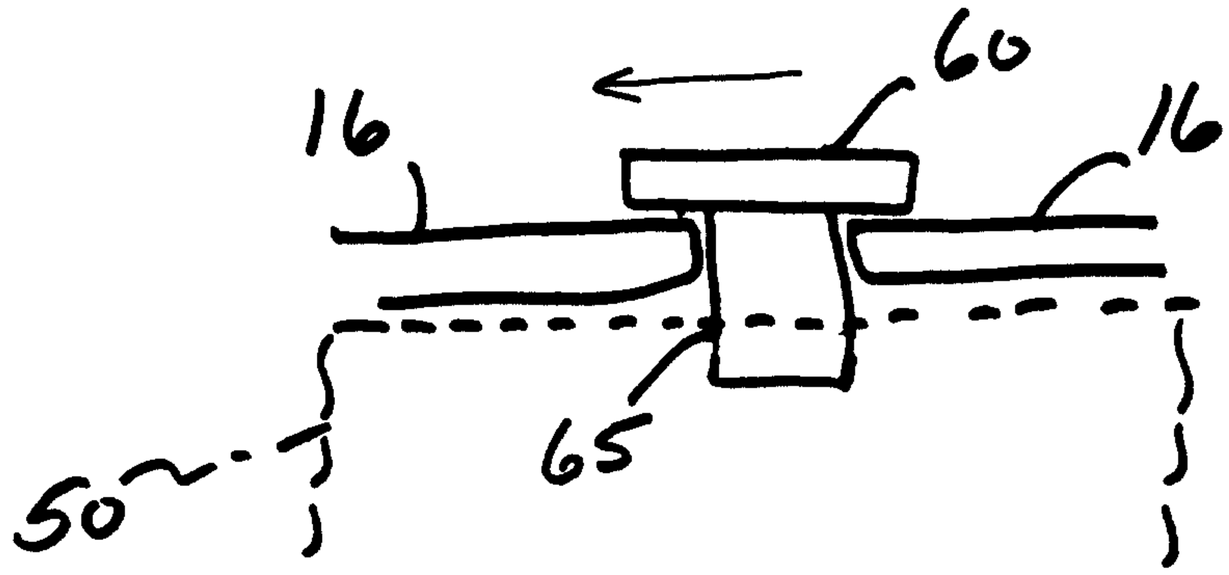


FIG. 8

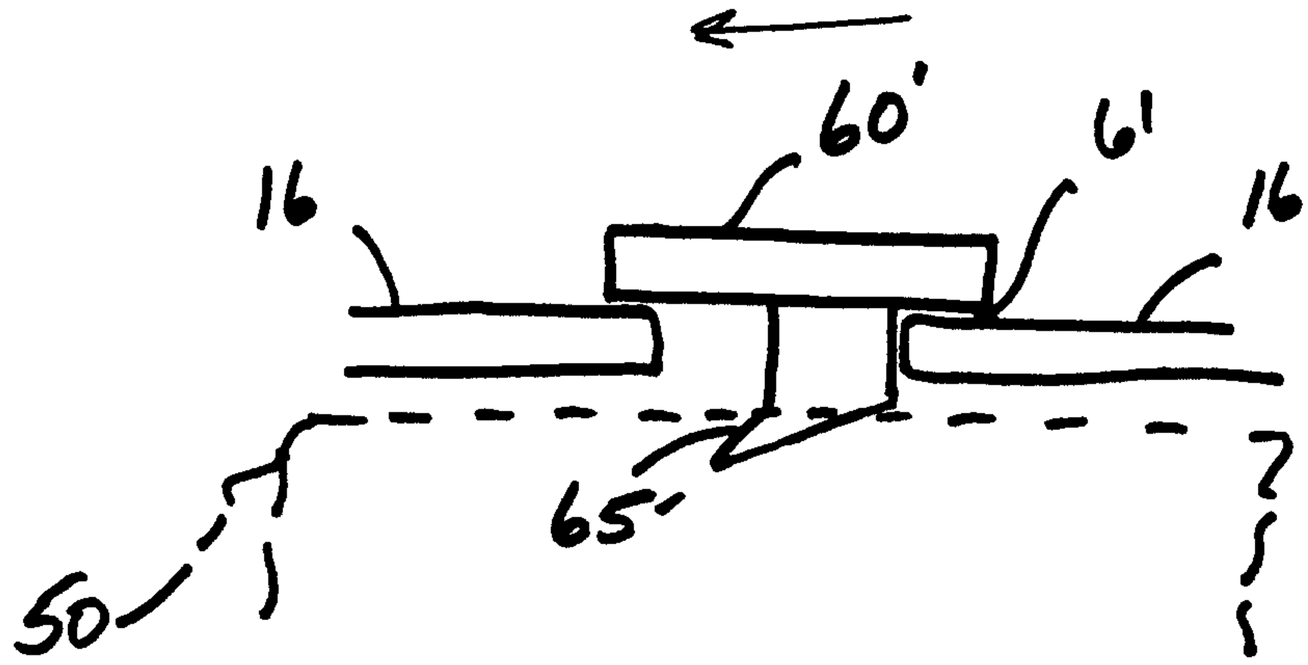


FIG. 9

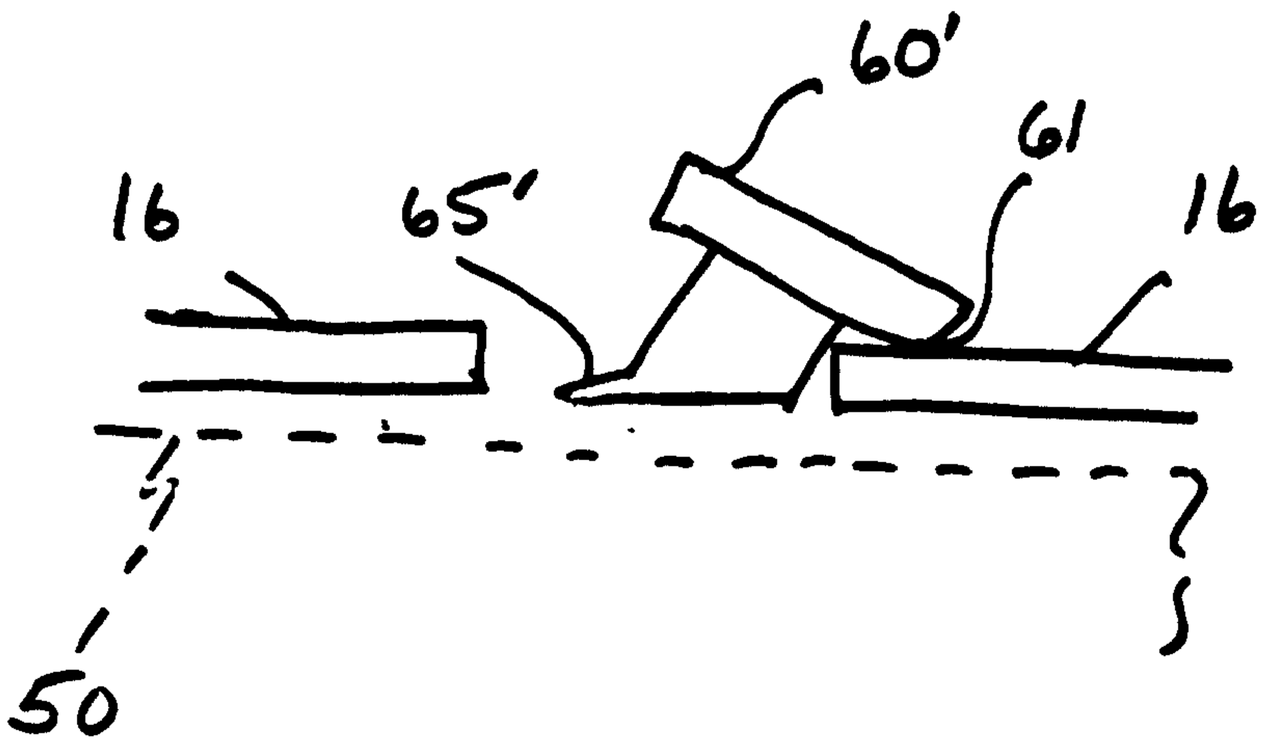
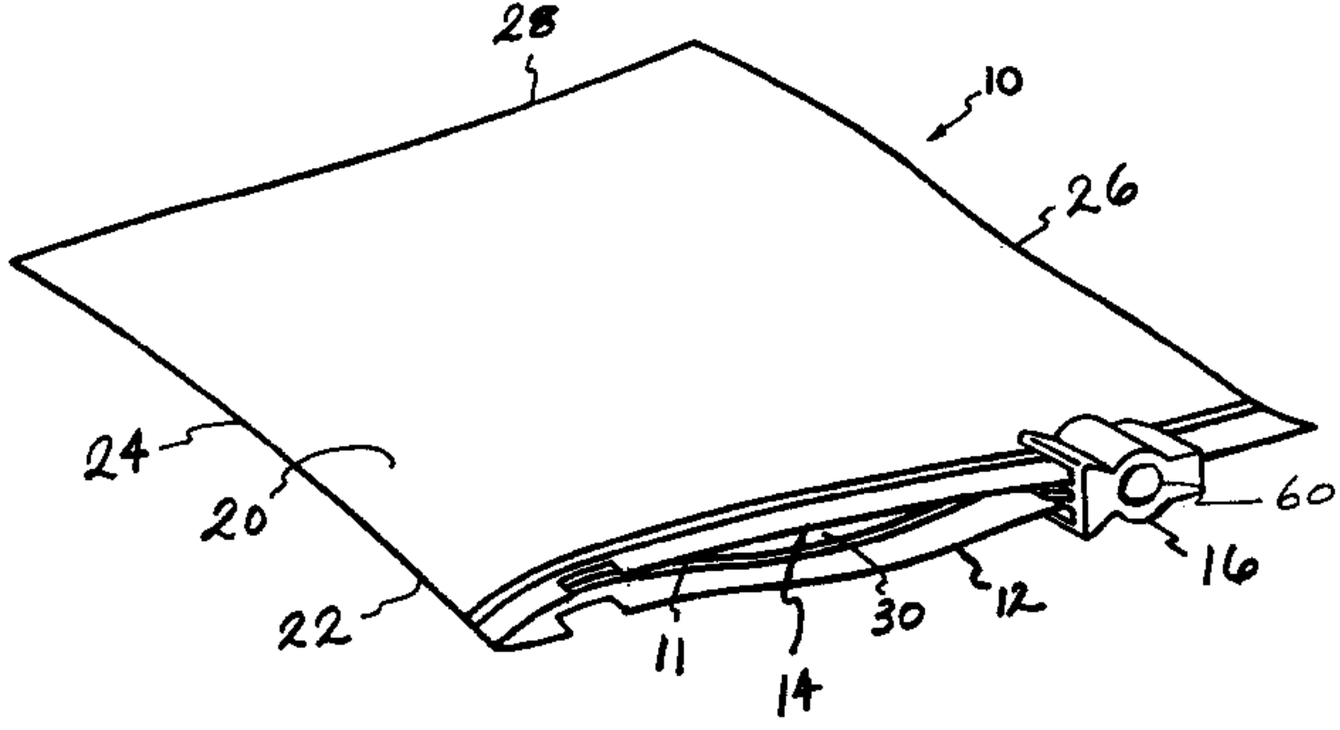


FIG. 10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