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(54) **Improved access reclosable package.**

(57) A reclosable package (10) comprising :
a first film web (12)
a second film web (14)
a means (18) for connecting the film webs ;
one or more openable and reclosable adhesive strips (26) bonded to and disposed between the first and second film webs, and
a seal between the first and second film webs, the seal, adhesive strips and connecting means cooperating to define at least one closed volume between the first and second webs.

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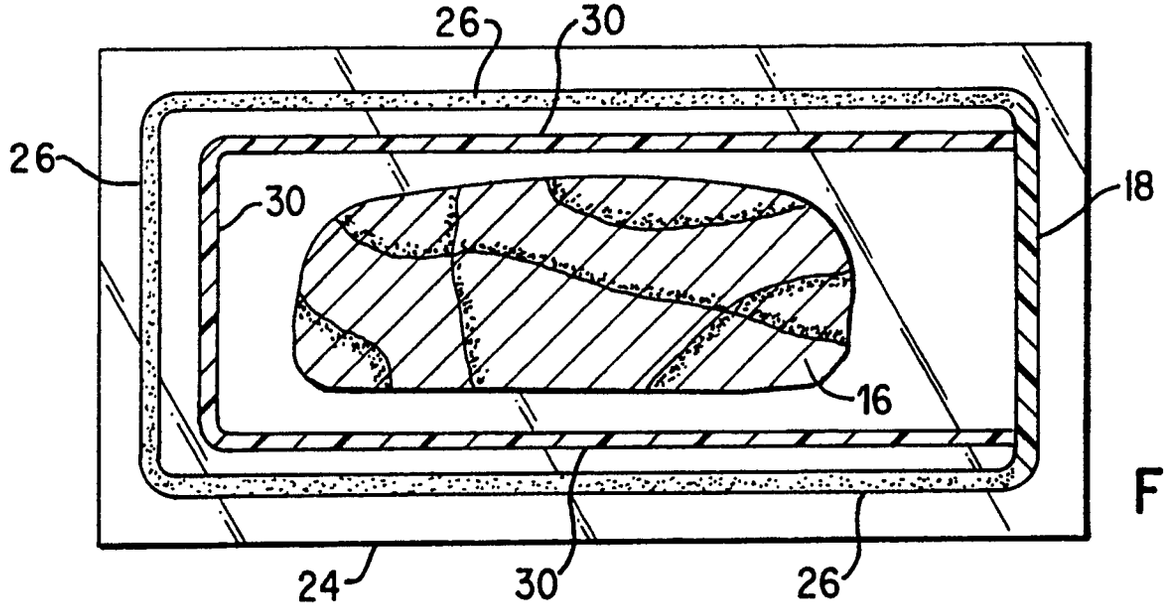

FIG. 11

IMPROVED ACCESS RECLOSABLE PACKAGE

The present invention relates to reclosable packaging, and more particularly to reclosable packaging for food products wherein the package is sealed and also includes an adhesive openable/reclosable strip along at least two sides of the package for improved access to the contained food product.

Many products, especially food products, are packaged in flexible or semi-rigid packaging materials made from polymeric films or laminates. In the case of food products such as luncheon meats, frankfurters, and the like, it is often desirable to use a portion of the contents and store the remainder in the refrigerator for later use.

Hermetic sealing of packaging materials for food applications is well known in the art. Because these packages are typically opened by a knife or other implement, they are not easily opened and are not reclosable.

Much effort has been directed towards the production of easy open packages where incompatible sealants or other systems are used to produce a package which can be opened without the use of a knife or other implement. However, such packages often are too easily opened, and the structural integrity and safety of the contained food product is therefore jeopardized.

Even in the case of many easy open packages, these packages are often not reclosable and therefore do not provide the possibility of use of a portion of the contained product, and reclosure and storage of the remainder of the product in the same package without the need for separate reclosure means.

It is therefore desirable to provide the combination of package integrity and product safety associated with a hermetic seal, and a reclosable feature which allows the end user to store unused portions of the package, once opened, in the same package for later use.

Efforts have been made even in this area to provide such a combination. U. S. Patent No. 4,782,951 (Griesbach et al) discloses a reclosable package having interlocking closure strips positioned outside of a hermetic seal or seal area. The hermetic seal is of the easy open type so as not to destroy the integrity of the package or closure strips on opening.

Such a combination requires the use of interlocking closure strips which require either an extrusion of the closure strips during production of the package material, or the separate step of applying the strips as discrete components to the packaging material prior to or during the final packaging operation. Additionally, such closure strips add an additional expense to the cost of producing such a package.

It is therefore also desirable to provide a reclosable package which preferably is hermetically sealed, and a means of opening and reclosing the package to preserve unused portions of the contained product, but without the necessity of utilizing interlocking closure strips, or complicating the extrusion process by incorporating closure strips into the extrusion steps.

It is a further object of the present invention to provide a reclosable package in which access along more than one side of the package by means of the openable/reclosable feature is available.

It is yet another object of the present invention to provide a reclosable package which is tamper evident so that the package changes in appearance after it has been opened and reclosed.

In one aspect of the present invention, a reclosable package having four sides comprises a first film web; a second film web; a means for connecting the film webs at a first side of the package; a product placed between the two film webs; an openable and reclosable adhesive strip bonded to and disposed between the first and second film webs, along a second and third side of the package; and a seal located along a fourth side of the package.

In another aspect of the present invention, a reclosable package having four sides comprises a first film web; a second film web; a means for connecting the film webs at a first side of the package; a product placed between the two film webs; and an openable and reclosable adhesive strip bonded to and disposed between the first and second film webs, along the second, third and fourth sides of the package.

In yet another aspect of the invention, a reclosable package having four sides comprises a first film web; a second film web; a product placed between the two film webs; and an openable and reclosable adhesive strip bonded to and disposed between the first and second film webs along each side of the package.

In still another aspect of the present invention, a reclosable package having four sides comprises a first film web; a second film web; an integral fold at a first side of the package, the webs having been formed from a single film; a product placed between the two film webs; an openable and reclosable adhesive strip bonded to and disposed between the first and second film webs, along the side of the package opposite the first side; and a seal located along the third and fourth sides of the package.

In another aspect of the invention, a method for making a reclosable package comprises applying an openable and reclosable adhesive strip along at least two sides of a first film web, on an interior surface thereof; placing a product on the first film web; covering the product and first film web with a second film web; and sealing the first and second film webs together to form the finished package.

In yet another aspect of the invention, a method

of making a reclosable package comprises folding a single film to form an integral fold at a first side of the package, and a first film web and second film web; applying an openable and reclosable adhesive strip along the side of the first film web opposite the integral fold, on an interior surface of the first film web; placing a product on the first film web; covering the product and first film web with the second film web; and sealing the first and second film webs together to form the finished package.

In still another aspect of the invention, a method of making a reclosable package comprises folding a single film to form an integral fold at a first side of the package, and a first film web and a second film web; applying an openable and reclosable adhesive strip along the side of the first film web opposite the integral fold, on an exterior surface of the first film web; placing a product on the first film web; covering the product and first film web with the second film web which overlaps the side of the first web at which the openable and reclosable adhesive strip has been applied; folding the second film web so that an interior surface thereof comes in contact with the adhesive strip; and sealing the first and second film webs together to form the finished package. This last method avoids any food contact with the adhesive strip.

Figure 1 is a plan view of a reclosable package in accordance with the present invention.

Figure 2 is a partially schematic cross-sectional view of the package of Figure 1.

Figures 3-4 are plan views of alternative embodiments of the inventive package.

Figure 5 is a partially schematic cross-sectional view of the package of Figure 4.

Figures 6, 7 and 8 are plan views of other alternative embodiments of the inventive package.

Figure 9 is a partially schematic cross-sectional view of the alternative embodiment of Figure 8.

Figures 10, 11 and 12 are plan views of still other embodiments of the invention.

Figures 13A, B through Figures 19A, B are elevational end views of various combination seals that may be used as part of the present invention.

Figures 20 and 21 are cross-sectional views of packages with an overlapping web in accordance with the present invention.

Figures 22 and 23 are perspective views of a thermoforming system in connection with the present invention.

Figure 24 is a perspective view of a vertical form/fill/seal system in connection with the present invention.

Figure 25 is a partially schematic cross sectional view of an easy open mechanism in connection with the present invention.

The term "heat seal" is used herein to mean a seal bonding together two film webs which may or may not be discrete films, by the application of a heated seal bar or other device at sufficient temperature, pressure and dwell time to result in a bond between the respective film webs in the heat seal area. Such a bond would not be easily peelable under normal usage, and would normally result in a hermetic seal.

The term "film" is used both in a stricter sense to denote a relative thin monolayer or multilayer thermoplastic or cross-linked thermoplastic structure useful as packaging material, and also in a broader sense to include thermoformable materials such as laminates wherein conventional adhesives, corona treating, flame treating, and like processes are used to bond together discrete films or layers into a final multilayer packaging material.

The term "folded film" is used herein to describe a single film or film web that has been folded upon itself to provide in effect two resulting film webs which can be sealed together in various ways described in more detail below.

The term "adhesive strip" is used herein to describe adhesives which can be applied by nozzles or other dispensing means to a film web to promote adhesion between contacting surfaces of the film web and the adhesive. This term implies that the adhesive strip is not a true reclosable strip, although it may be one which can be easily peeled.

The term "peelable heat seal" is used herein to describe a heat seal as discussed above which is made under such conditions of temperature, pressure and dwell time that the resulting heat seal has an opening force of between one pound and about six pounds. Peelable heat seals are therefore heat seals which can be made by for example seal bars or other such devices, but which can be peeled open by manually pulling apart a package. The use of a knife or other implement to open the package by puncturing or tearing is not needed if a peelable heat seal is part of the package in accordance with the present invention.

The term "openable/reclosable adhesive strip" is used herein to describe a strip of a green, i.e. uncured, hot melt adhesive or similar material preferably applied by a nozzle or like dispensing means to a film during a packaging process. These adhesives have the property of providing a peelable seal which can be reclosed after the package has been opened by pressing the film webs together in the vicinity of the adhesive strip.

The term "intermittent heat seal" means a heat seal as described above, but one which is discontinuous along its length so that periodic alternating portions of the seal are actually defined by thermally unsealed areas.

The term "combination seal" is used to describe various alternative embodiments in which an openable/reclosable adhesive strip is used in combination with intermittent heat seals either in a superimposed fashion or in a juxtaposed fashion to provide a seal which is peelable and reclosable.

The legend beneath Figure 1 of the drawings graphically depicts the various types of seals defined above.

Terms such as "second side of the package" and "third side of the package" mean generally the peripheral area around a typical four sided package at which one or more seals of the various types discussed herein is present. The relative location of these "sides" can best be determined by reference to the plan views of for example Figures 1, Figures 3 and 4, and so on. Thus, the terms "side" or "sides" are to be distinguished from the terms "surface" or "surfaces" which refer to the two major surfaces or external faces of a film web.

Of course, those skilled in the art will understand that although the invention is described in some detail below with reference to a four sided package, packages with less or more than four sides, may be made using the seals and combinations of seals described herein for the present invention.

Referring to Figure 1 a package 10 includes a first film web 12 (see Figure 2) and a second film web 14. Packaging films especially for food applications are well known in the art, and vary according to the desired end use properties including heat sealability, abuse resistance, shrinkability, optics, and other considerations.

When a suitable film is selected, it may be used in various processes such as thermoforming or vertical form/fill/seal operations, in connection with the present invention, to provide a package having a reclosable feature and preferably a hermetic seal. As indicated above, the term "film" here includes laminates such as thermoformable multilayer thermoplastic constructions made by coextrusion, extrusion coating, conventional lamination, corona treating and like processes. Figure 1 shows a food product 16 packaged within film webs 12 and 14.

Although the packages of the present invention are preferably hermetic, as required in many end-use applications, this is not required in all applications and the present invention is broad enough to include non-hermetic packaging made using the various combinations of seals described in more detail below.

Referring to Figures 1 and 2, film webs 12 and 14 are actually a part of a single film which is folded at fold 18 upon itself to form the two film webs. Between them is trapped the product such as a food product 16. Depending on the equipment used, film types, and processing conditions, portions of the first and second film webs 12 and 14 may self-weld or otherwise be in close contact along some portion 20 of the package.

Product 16 is typically a food product, and the present invention is especially useful for packaging luncheon meats and franks.

An adhesive strip 22 is located on one side of films 12 and 14 i.e. towards one side or end of the final package, and in the case of Figure 1 is located between a relevant peripheral portion 24 of the film web 14, and the food product 16.

It will be noticed throughout the drawings that in typical conventional apparatus for thermoforming thermoplastic materials, placing the product in the cavity, covering the product and first material with a second web and applying the appropriate seals some peripheral material will be outside the bounds of the final finished and cut package. This material is depicted throughout as reference numeral 24. The extent of this peripheral film will vary depending on the process and equipment used.

An openable and closable adhesive strip 26 is defined along two adjoining sides of the package of Figure 1.

Upon opening the package, the openable and reclosable adhesive strip 26 can be peeled back to gain access to food product 16.

Food product 16 is depicted in Figure 1 in general fashion, but can be for example luncheon meats, frankfurters, and other food products, often in discrete portions, which may be used in part with the remainder resealed by closing the package back along openable/reclosable adhesive strip 26.

Figure 3 shows an alternative embodiment of the invention in which heat seal 28 is located along one side of the package.

The openable/reclosable adhesive strip 26 may be applied by various means and in various ways to either the first film 12 or second film 14, or both. It is preferably applied in a substantially straight line along a relatively narrow portion of one side of the film 12 or 14, or both. Also preferably, the openable/reclosable adhesive strip 26 will be substantially parallel to a relevant side of the finished package.

The adhesive used in the openable/reclosable adhesive strip 26 is preferably a green, i.e. uncured hot melt adhesive. Such adhesives are well known in the art. The adhesive is preferably applied by a nozzle or like dispensing means to the film during the packaging process. In this way, roll stock used in the packaging process will not be complicated by the presence of the adhesive before the packaging steps are initiated. However, the adhesive may also be applied as a discrete strip of material, for example a thermoplastic polymeric material to which a hot melt or similar material has been applied. The adhesive may be applied as a hot melt spray, cold glue spray, hot melt coating, or cold glue coating to a film web as it is fed from a rollstock to create longitudinal adhesive strips. Transverse adhesive strips may be applied by intermittently spraying a hot melt or cold glue. These processes may be combined to produce any combination of one, two, three or four side openable/reclosable adhesive strip seals in the finished package.

Apparatus conventional in the art can be used to install a heat seals or other seals described herein parallel to or superimposed on any or all of the open-

able/reclosable adhesive strips to produce various seal arrangements on one or more sides of the finished package. Figures 22 and 23 graphically illustrate methods of applying the adhesive material to a film web.

Figure 2 shows a cross sectional view of the package of Figure 1, and the relationships among the various components of the package.

The films 12 and 14 of the drawings are depicted as monolayer films, and preferably comprise a heat sealable material when needed to produce a finished package having a heat seal, peelable heat seal, or combination or intermittent seal. Other types of films having for example radiation frequency sealability may also be used when needed. Also, multilayer thermoplastic constructions are included within the scope of this invention.

Referring to Figure 3, an alternative embodiment includes the use of a heat seal 28 along one side of the package with the package otherwise resembling that of Figure 1.

Referring to Figures 4 and 5, an alternative embodiment of the invention includes the use of an openable and reclosable adhesive strip 26 on two sides of the package, and a peelable heat seal 30 bonding together the first and second film webs along a portion of the package substantially parallel to the openable and reclosable adhesive strips, and between such strips and the food product 16.

Figures 6 and 7 show two additional alternative embodiments. In Figure 6, an intermittent heat seal is disposed between and substantially parallel to the respective openable and reclosable adhesive strips 26 and the food product 16 in a manner similar to the seal arrangement of Figure 4. One side of the package has a continuous heat seal 28. In Figure 7 a package is depicted similar to that of Figure 6, but having a combination heat seal 34 , and an adhesive strip 22 along the fourth side of the package.

Figures 8 and 9 show another alternative embodiment in which the openable and reclosable adhesive strip is located along two adjacent sides of the package, but this time inboard of i.e. closer to the food product than the intermittent heat seal 32. Unlike the previous figures, Figure 8 shows that the remaining two sides of the package are heat seals, so that instead of a folded film folded at 18, heat seals 28 are used for the third and fourth sides of the package.

Figure 10 depicts a package in accordance with the invention in which openable and reclosable adhesive strips are used along two sides of the package and then another set of openable and reclosable adhesive strips are positioned substantially parallel to respective outer strips. An adhesive strip bonds a third side of the package, and a heat seal bonds a fourth side of the package.

It should be noted that various combinations of the different seal types utilized in this invention are interchangeable, so that for example in Figure 8 the openable and reclosable adhesive strips are located between the intermittent heat seal and the food product. The reverse is also possible. Either a fold 18 or one of the seal types discussed herein is suitable for a third side of the package, and a fourth side of the package may include any of the seal types discussed. These seal types may be produced by conventional apparatus and processes well known in the art.

Several functions are served by these different seal arrangements.

First, by providing peelable access along more than one side of the package, easier access to the contained product is provided.

Secondly, by including an openable and reclosable adhesive strip along at least two sides of the package, not only is access to the package improved, but the package can be more easily reclosed in a way to provide the same improved access on reopening the package a second and third time.

Using a folded film with a fold 18 along one side of the package, only one film is necessary to produce the finished package rather than two discrete rollstocks. This is especially useful in vertical form-fill-seal applications as depicted for example in Figure 24.

A third important function of these seal arrangements is that in the case of the intermittent heat seals and combination seals, once the package is opened, reclosing the package will produce a package with a different appearance. This makes the package a tamper evident package and allows the consumer to determine whether the package has been opened before sale.

A fourth feature of the present invention is that the package can be made hermetic by the use of peelable heat seals, adhesive strips and heat seals as depicted in the drawings, so that a package with extended shelf life and freshness can be obtained. The openable and reclosable adhesive strip can itself be made hermetic or not hermetic depending on the process and desired end-use, and the manner in which the adhesive is applied to the film.

Figures 1-10 describe a package in which two sides include an openable and reclosable adhesive strip. Figure 11 discloses a similar package but one in which three sides of the package include the openable and reclosable adhesive strip 26. In Figure 11, a peelable heat seal 30 runs parallel to the openable and reclosable strip along each of the three respective sides. A fold 18 along the fourth side of the package completes the sealing arrangement.

In Figure 12, the openable and reclosable adhesive strips 28 surround the food product along all four sides, as does the peelable heat seal 30.

As in the case of the package configurations with openable and reclosable adhesive strips along two sides, the packages of Figures 11 and 12 can be mod-

ified in the various ways described above. For example, the positions of the openable and reclosable adhesive strips 26 and peelable heat seals 30 can be reversed , so that the peelable heat seals are peripheral to the openable and reclosable adhesive strips. In the case of the package disclosed in Figure 11, an adhesive strip or heat seal may be substituted for the fold 18 on the fourth side of the package.

In addition, a third seal of the various types described above may be included along any side of the package so that for example in the package of Figure 11 an additional openable and reclosable adhesive strip 28 may be disposed substantially parallel to the peelable heat seal and between the peelable heat seal 30 and the food product 16 so that in effect three discrete seals are located substantially parallel to one another along at least one side of the package.

The choice of the number, type and positioning of the various seal types described will depend on the end-use application, types of films, process, apparatus, need for tamper evidence, and need for improved access to the product.

With respect to the combination seal depicted in the legend beneath Figure 1, and in Figure 7, several seals of this type can be produced in accordance with the invention. Figures 13A through 19A disclose elevational end views of an openable and reclosable adhesive strip at one side of the package of the invention. The thicknesses of the strip in relation to the width of the package are somewhat exaggerated for clarity. As can be seen in Figures 13A through 19A, the openable and reclosable adhesive is applied in the various ways described above along certain portions of a side of the package depending on the desired combination seal to be produced. The portions of the space between film webs 12 and 14 within which the openable and reclosable adhesive material will be located is indicated at reference numeral 36 in Figure 13A through 19A. The portions of the space between the respective film webs where the adhesive is not applied is indicated at reference numeral 38 in the same figures.

A fragmentary view of seal bars 40 of various configurations is shown in the upper portion of each of figures 13B through 19B. Each of these figures corresponds to a like numbered figure depicting the position of the adhesive within the openable and reclosable adhesive strips at a side of the package. By applying the seal bar to a side of the package in which the adhesive is so positioned, various combination seals can be produced as shown in Figures 13B through 19B.

For example, in Figure 13B a heat seal is applied in a discontinuous manner across the one side of the film along which the adhesive has been applied as shown in Figure 13A. The result is a combination seal in which some portions 42 are heat sealed and some portions 44 are held together by the openable and reclosable adhesive. One advantage of such a seal is the tamper evidence produced by opening and then reclosing the seal. In addition, the seal is itself reclosable so that tamper evidence, peelability and reclosability are all combined in one combination seal. The remaining Figures 14B through 19B show various ways in which a heat seal can be applied to a portion of but not the entire length of the openable and reclosable adhesive strip 26 represented by Figures 14A through 19A. These seals are all referred to as combination seals in the sense that an uncured hot melt adhesive or similar material which provides openability and reclosability is combined at discontinuous portions with a heat seal created by the application of a seal bar or similar device to the respective film webs.

Referring to Figure 22, a thermoforming system is shown in a fragmentary perspective view. The system 60 includes a thermoforming machine 62 and cavities 64 formed within a film 12 fed from a roll 68. As film 12 proceeds from right to left, cavities 64 are formed in the film. A source 70 of a hot melt uncured adhesive delivers the adhesive to nozzles 72 which apply the adhesive in a strip pattern 74 along the film 12 as it is advanced. A food product may then be placed in the formed cavities in film 12 and covered with a second film to produce a Package like that depicted in e.g. Figures 1 and 2, but with a formed cavity in the lower film.

Of course, the film 14 depicted in for example Figures 1 and 2 may itself be thermoformed according to the process and using the apparatus described in Figure 22. Thus, one or both of the first and second film webs may be thermoformed.

Figure 23 shows a variation of the process shown in Figure 22, in which transverse adhesive strips are applied by a similar process using a spray nozzle system 76 to apply the adhesive in transverse strip patterns 78.

A combination of both longitudinal and transverse openable/reclosable adhesive strips may be applied using the combination of the process shown in Figure 22 and 23.

Figure 24 shows the use of the present invention in a vertical form/fill/seal system 80 in which film 82 is indexed around a mandrel 84 and a food product is introduced through a tube 86 in a sequence well known in the art. A source of hot melt adhesive 88 introduces the adhesive to the interior of the tubular film as it is being formed. The tubular film is longitudinally sealed at 90 and transversely sealed at 92 to produce a package having a longitudinal seal, two transverse seals (top and bottom of the finished package) and an adhesive strip located substantially parallel to and spaced apart from the longitudinal seal 90.

To improve the consistency of openability, one web can be corona treated to obtain greater adhesion of the adhesive strip to that web than to the second web. Other methods can also be used to achieve this

difference in adhesion. These include the use of different surface (sealant) materials for the two webs; manipulating the conditions under which the hot melt is applied; and applying a coating to one or both of the webs to either improve release or improve adhesion.

Figure 25 shows a partially opened package in which, because of dissimilar adhesion as described above, the openable and reclosable adhesive strip 26 remains bonded to web 12 rather than web 14 as the package is opened.

While the present invention has been described in terms of preferred embodiments, those skilled in the art will understand that modifications may be made after review of the specification and drawings. Such modifications are deemed to be within the scope of the claims that follow.

Claims

1. A reclosable package comprising:
   a first film web;
   a second film web;
   a means for connecting the film webs;
   one or more openable and reclosable adhesive strips bonded to and disposed between the first and second film webs, and
   a seal between the first and second film webs, the seal, adhesive strips and connecting means cooperating to define at least one closed volume between the first and second webs.

2. A reclosable package according to claim 1 wherein the means for connecting the film webs is an integral fold, the webs having been formed from a single film.

3. A reclosable package according to claim 1 wherein the means for connecting the film webs is a heat seal, preferably a peelable heat seal, most preferably a peelable heat seal with an opening force of between 0,754 kg and 2.724 kg.

4. A reclosable package according to claim 1 wherein the means for connecting the film webs is an adhesive strip, preferably an openable and reclosable adhesive strip.

5. A reclosable package according to any one of the preceding claims wherein the film webs are made from a thermoplastic material.

6. A reclosable package according to any one of the preceding claims wherein the seal is a heat seal or an adhesive strip.

7. A reclosable package according to any one of the preceding claims wherein one or more peelable heat seals, preferably intermittent peelable seals, are located adjacent and substantially parallel to respective openable and reclosable adhesive strips.

8. A reclosable package according to any one of the preceding claims wherein at least some of the openable and reclosable adhesive strips further include an intermittent peelable heat seal disposed along portions of each openable and reclosable adhesive strip to form a combination seal.

9. A method for making a reclosable package comprising:
   applying one or more openable and reclosable adhesive strips to a first film web, on surface thereof to face a second web;
   sealing the first and second film webs together to define a closed volume there between.

10. A method of a making a reclosable package comprising:
    folding a single film to define a first film web and a second film web;
    applying an openable and reclosable adhesive strip to the first film web remote from the fold, on the surface of the first film web to face the second film web
    sealing the first and second film webs together to define a closed volume therebetween.

11. A method of making a reclosable package comprising:
    folding a single film to form a first web and a second film web;
    applying an openable and reclosable adhesive strip to the side of the first film web remoter from the second film web
    folding the second film web so that adjacent closed volume to be defined comes in contact with the adhesive strip; and
    sealing the first and second film webs together to define the closed volume.

12. A method according to claim 9, 10 or 11 wherein at least one peelable heat seal is formed adjacent and substantially parallel to respective openable and reclosable adhesive strips.

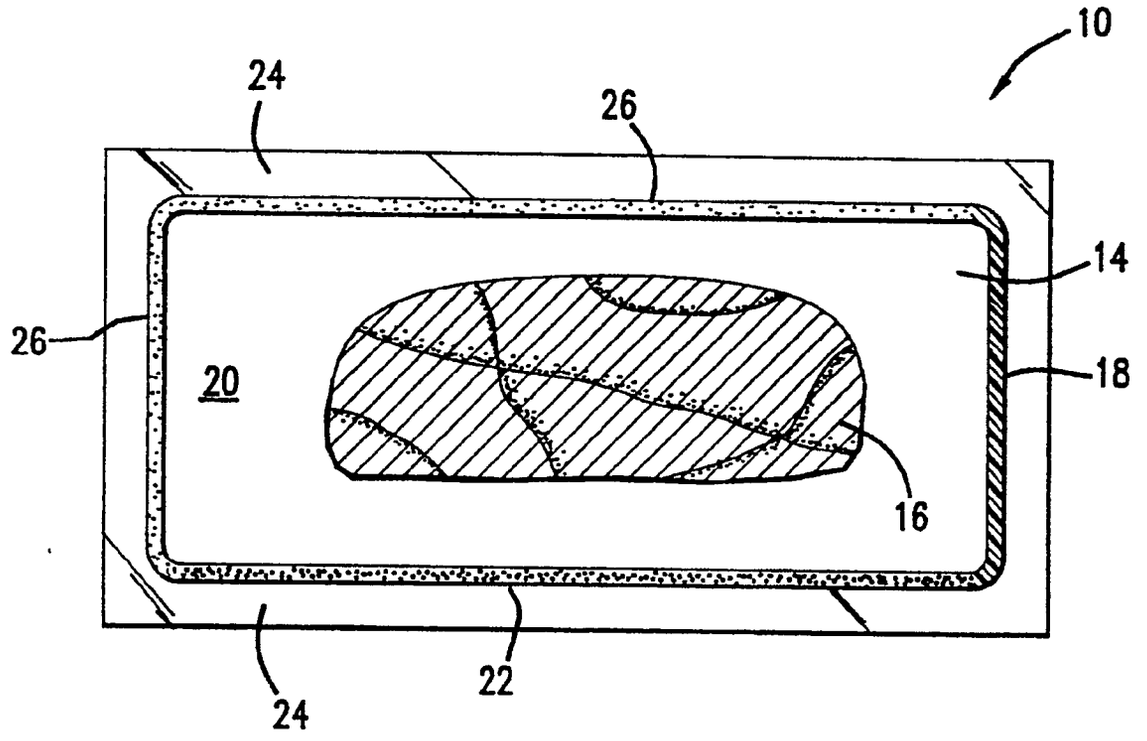

FIG.1

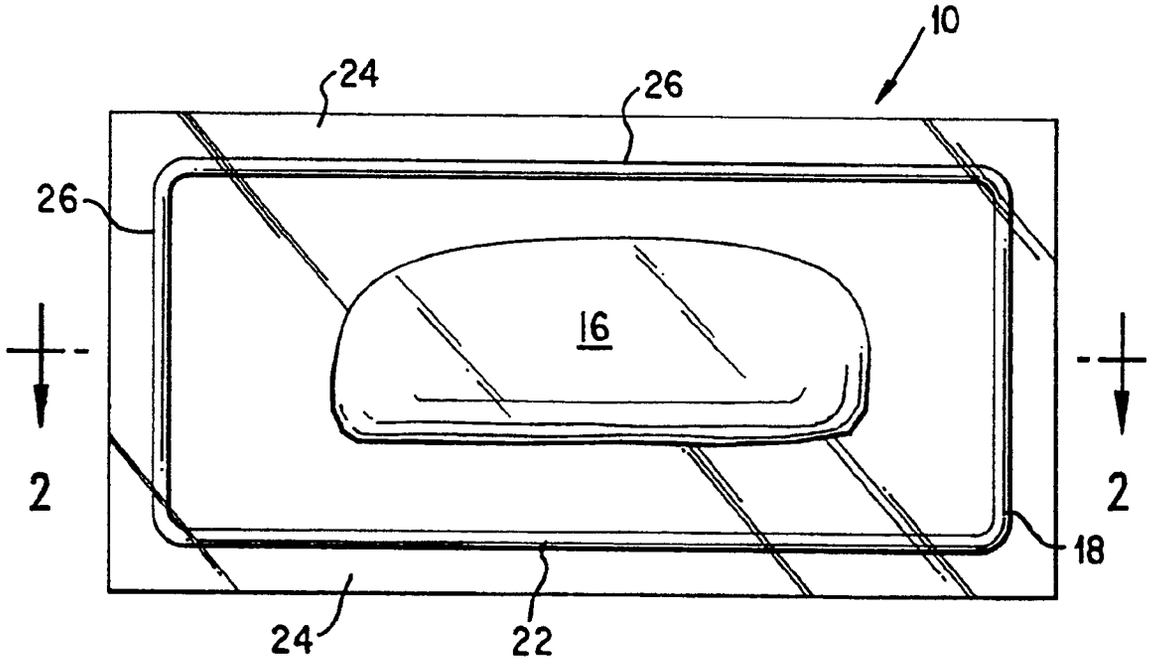

FIG1a

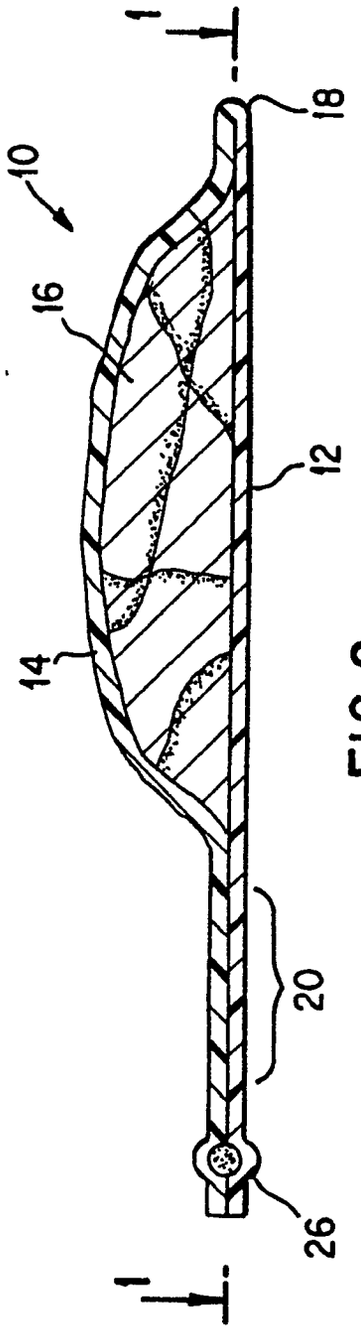

FIG. 2

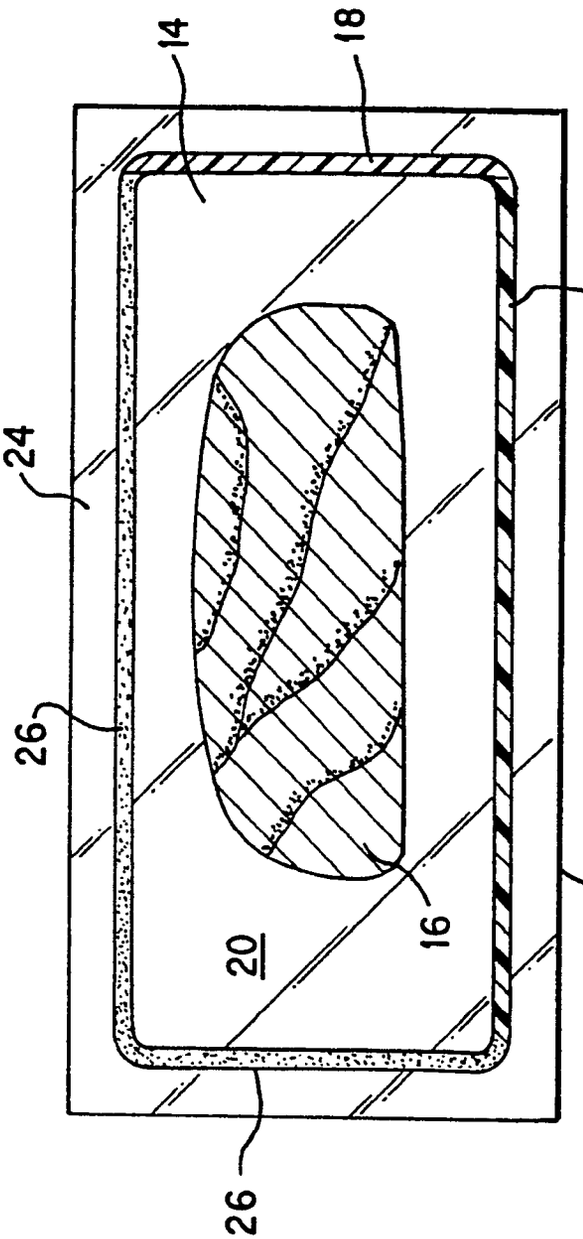

FIG. 3

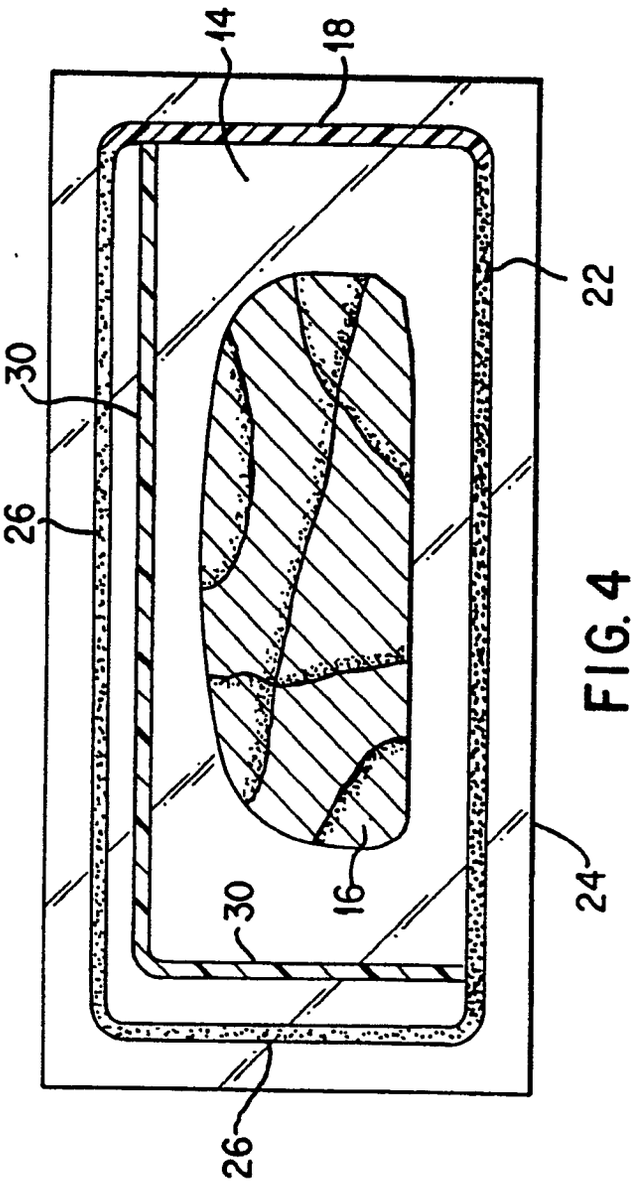

FIG. 4

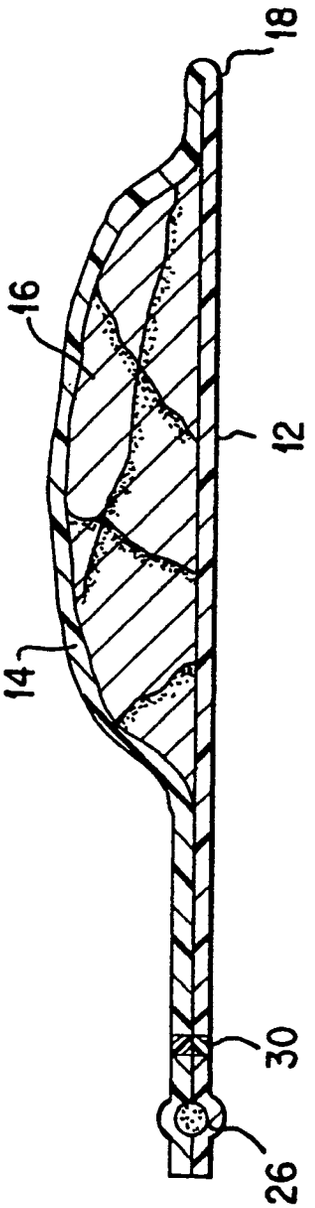

FIG. 5

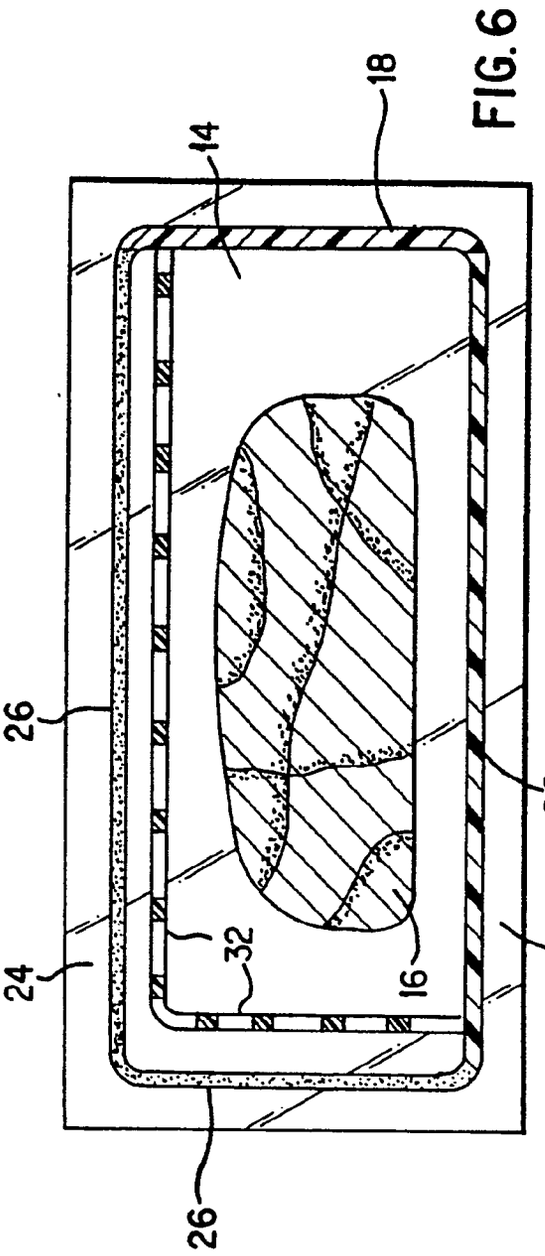

FIG. 6

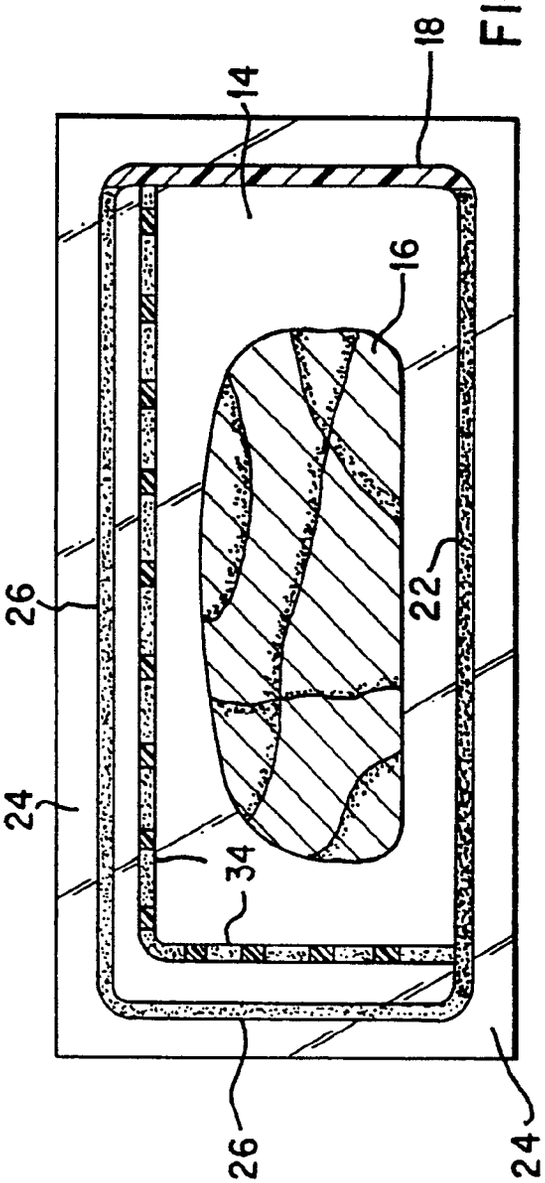

FIG. 7

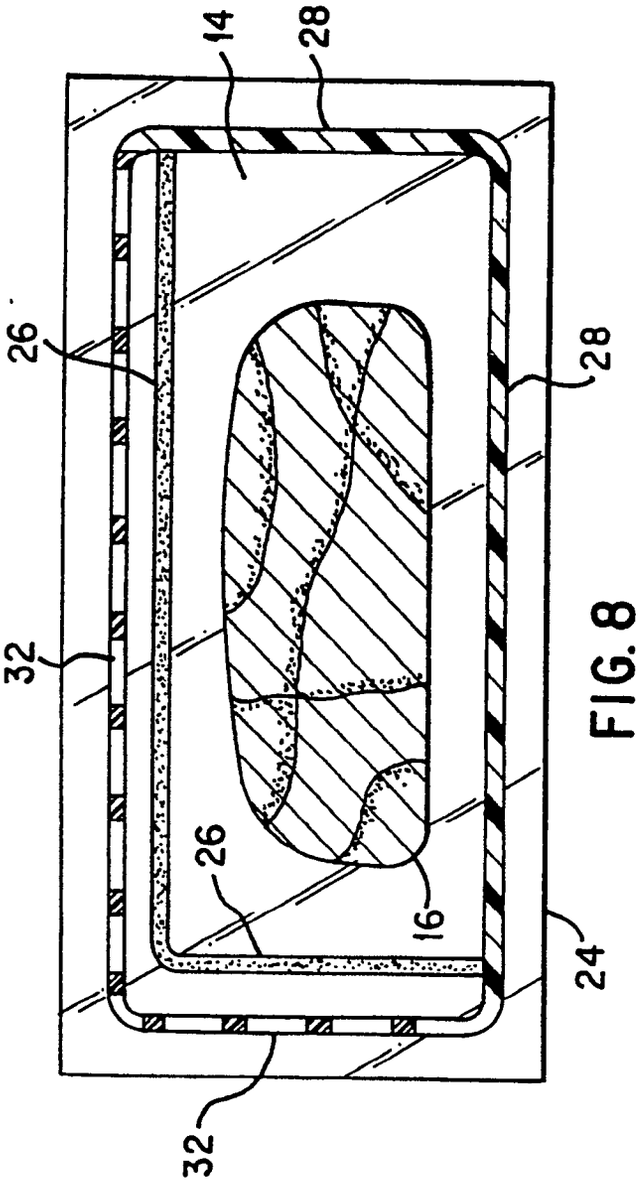

FIG. 8

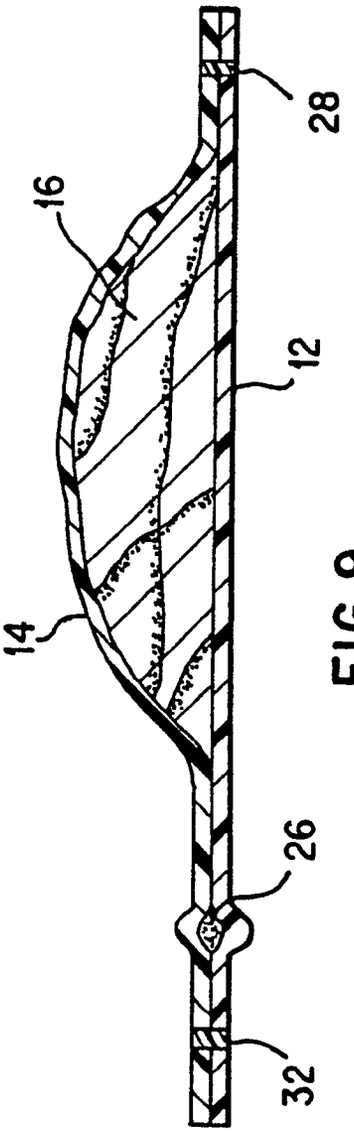

FIG. 9

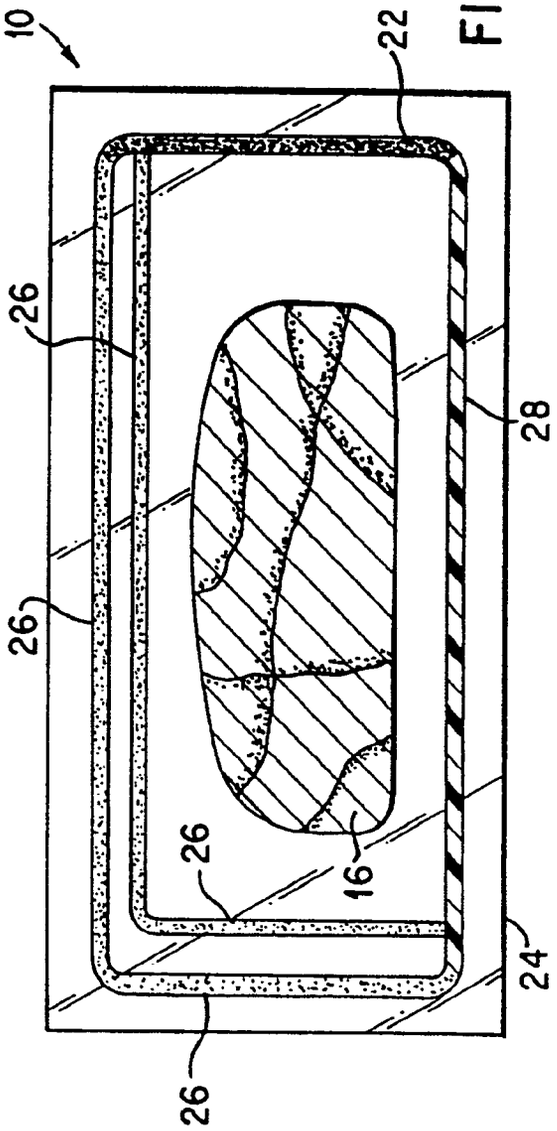

FIG. 10

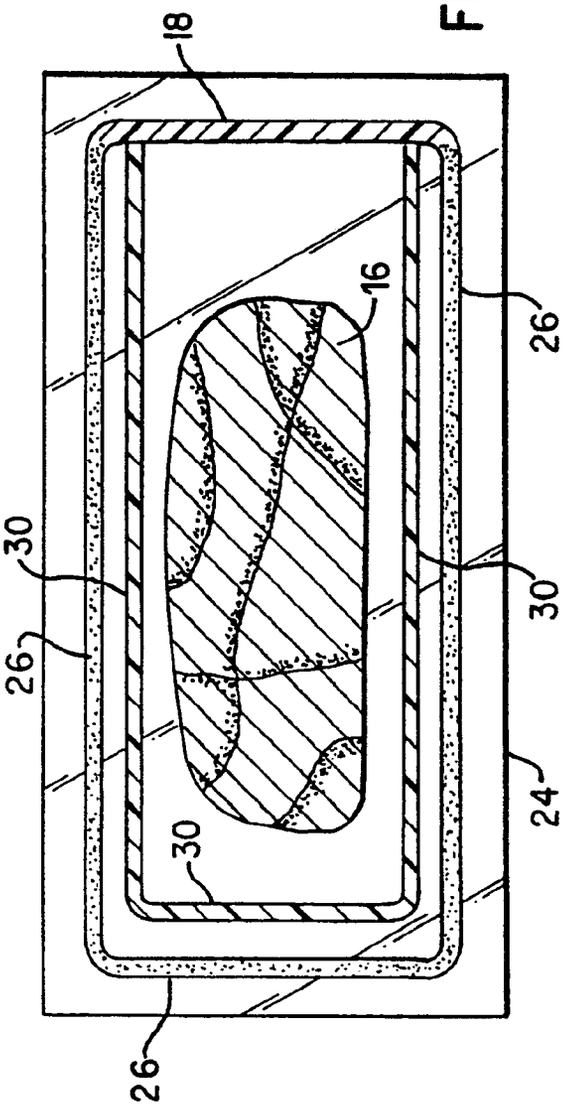

FIG. 11

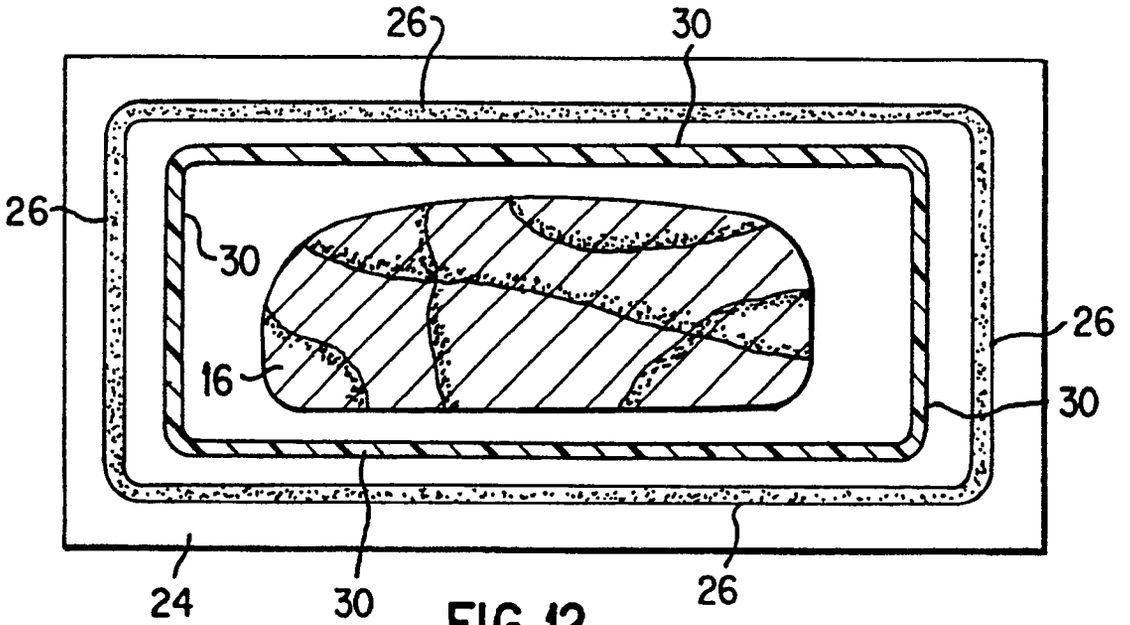

FIG. 12

FIG. 13A

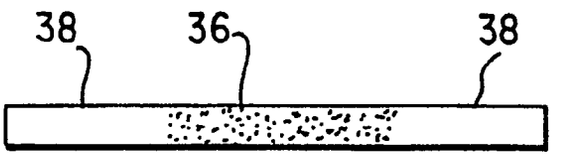

FIG. 14A

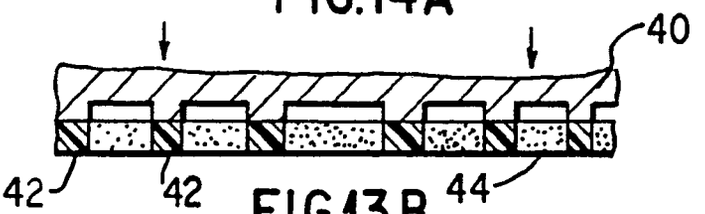

FIG. 13B

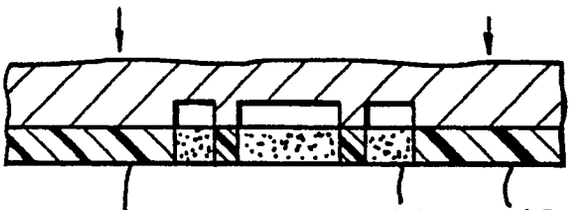

FIG. 14B

FIG.15A

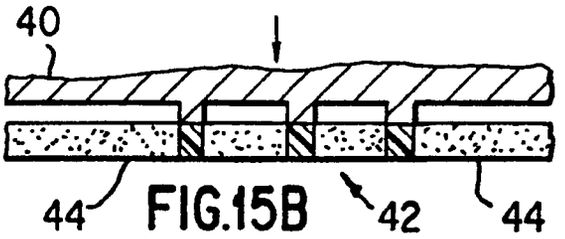

FIG.15B

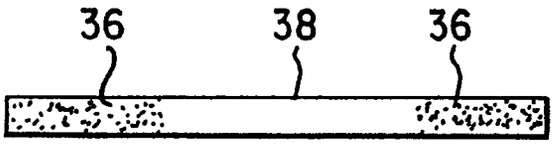

FIG.16A

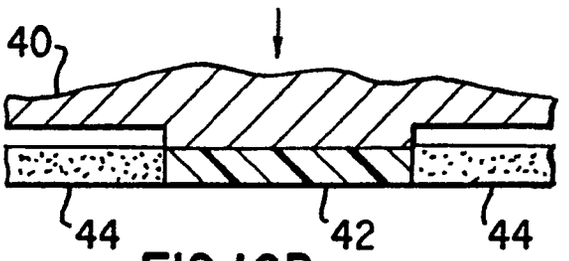

FIG.16B

FIG. 17A

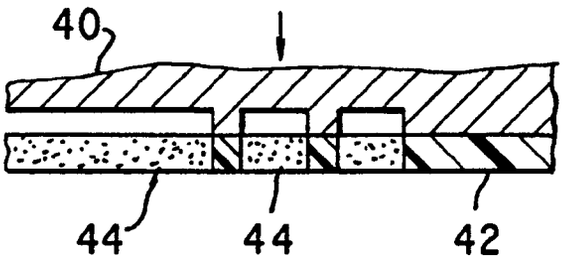

FIG. 17B

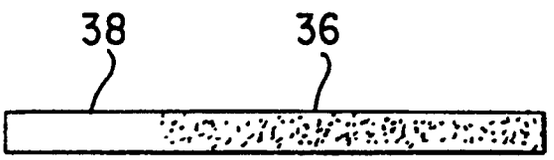

FIG.18A

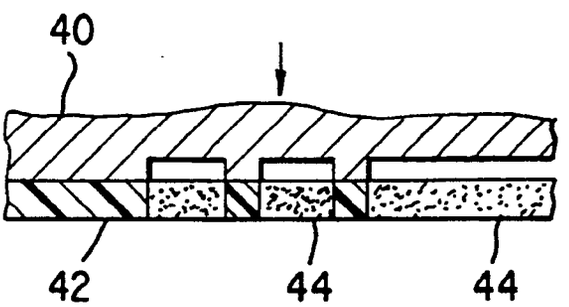

FIG. 18B

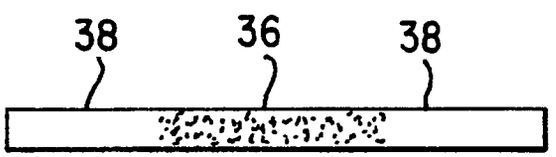

FIG. 19A

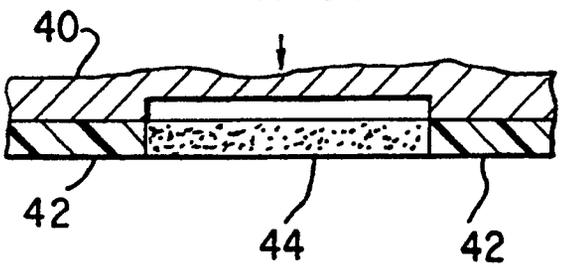

FIG. 19B

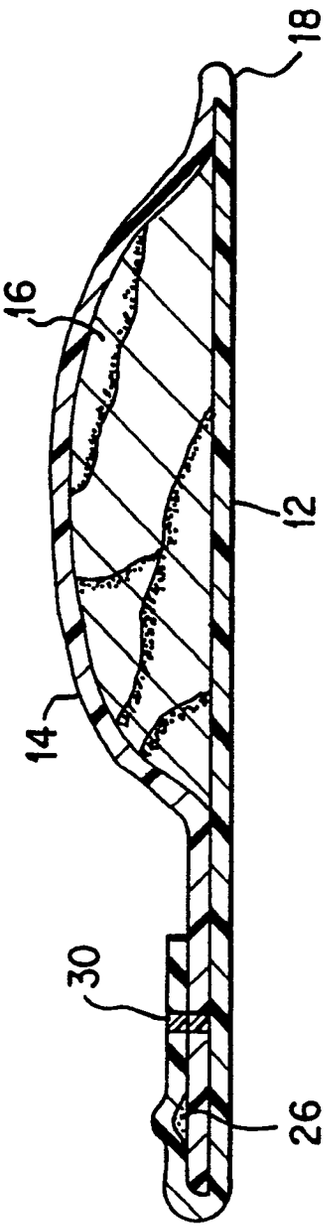

FIG. 20

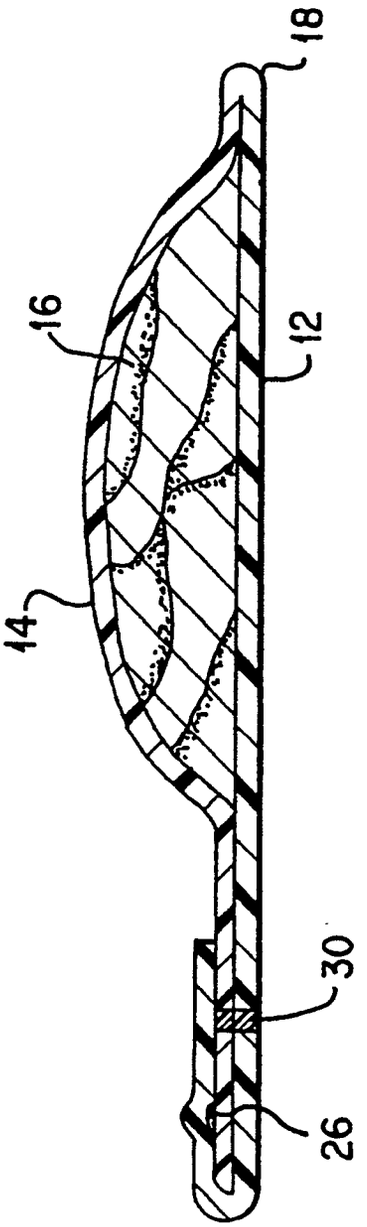

FIG. 21

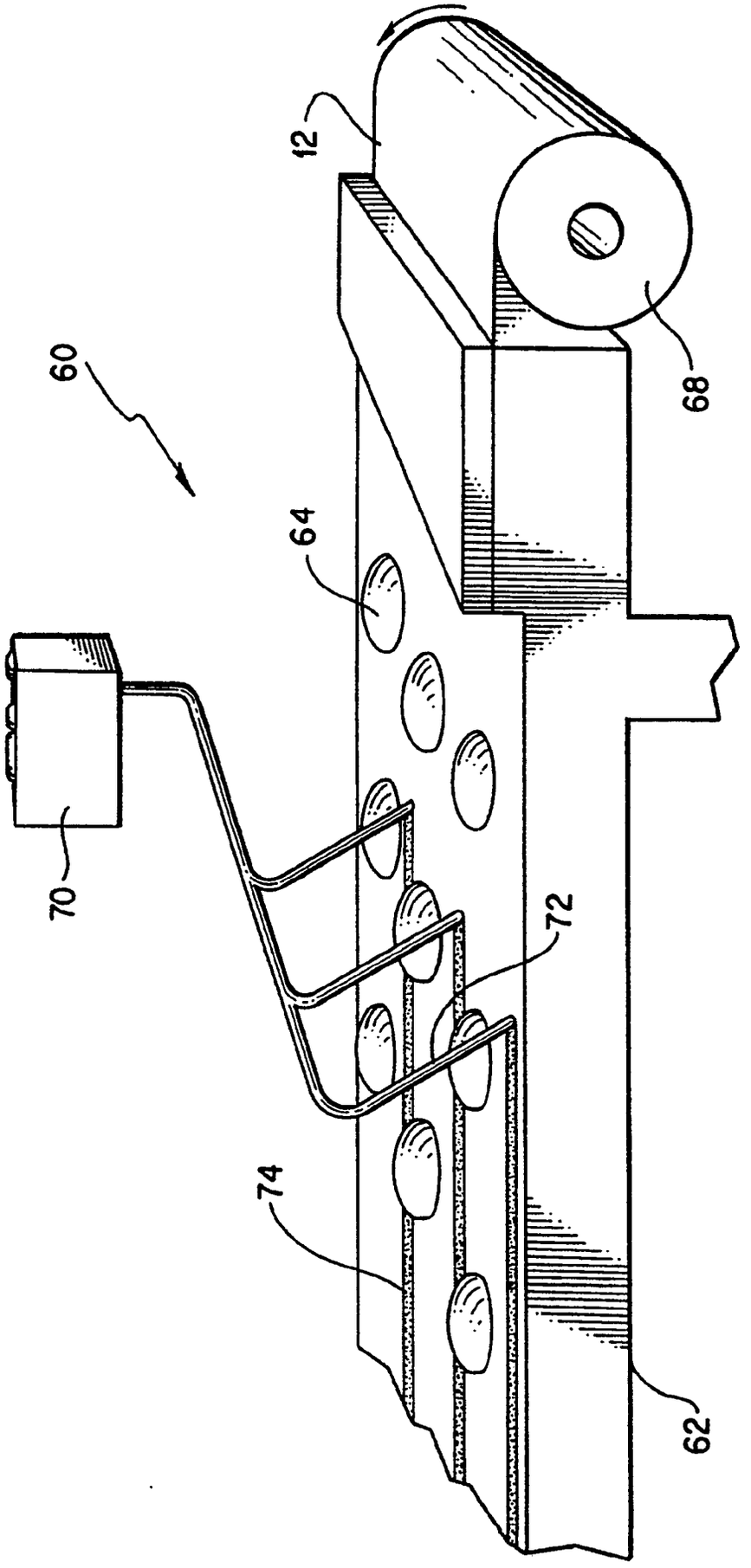

FIG. 22

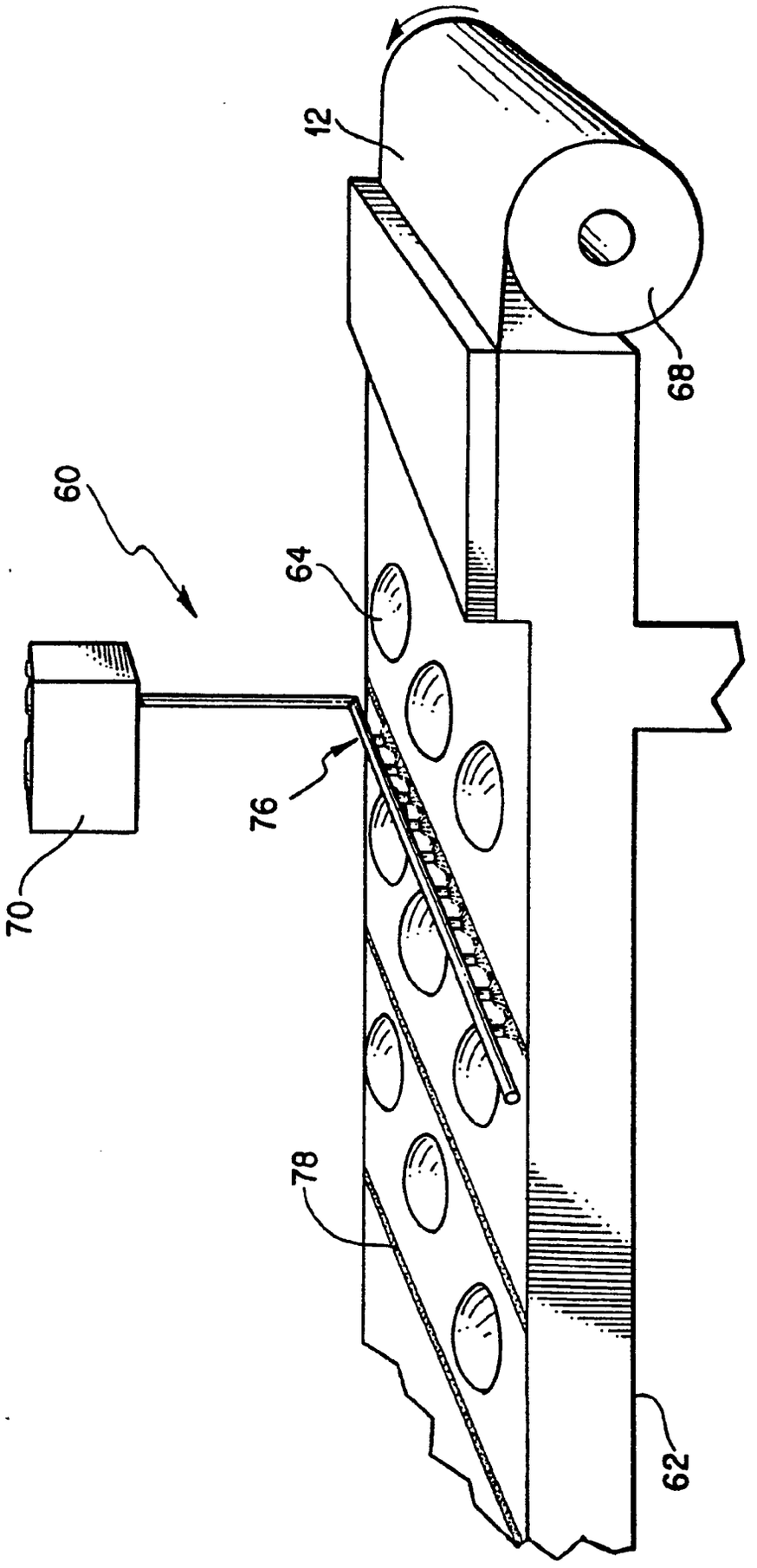

FIG. 23

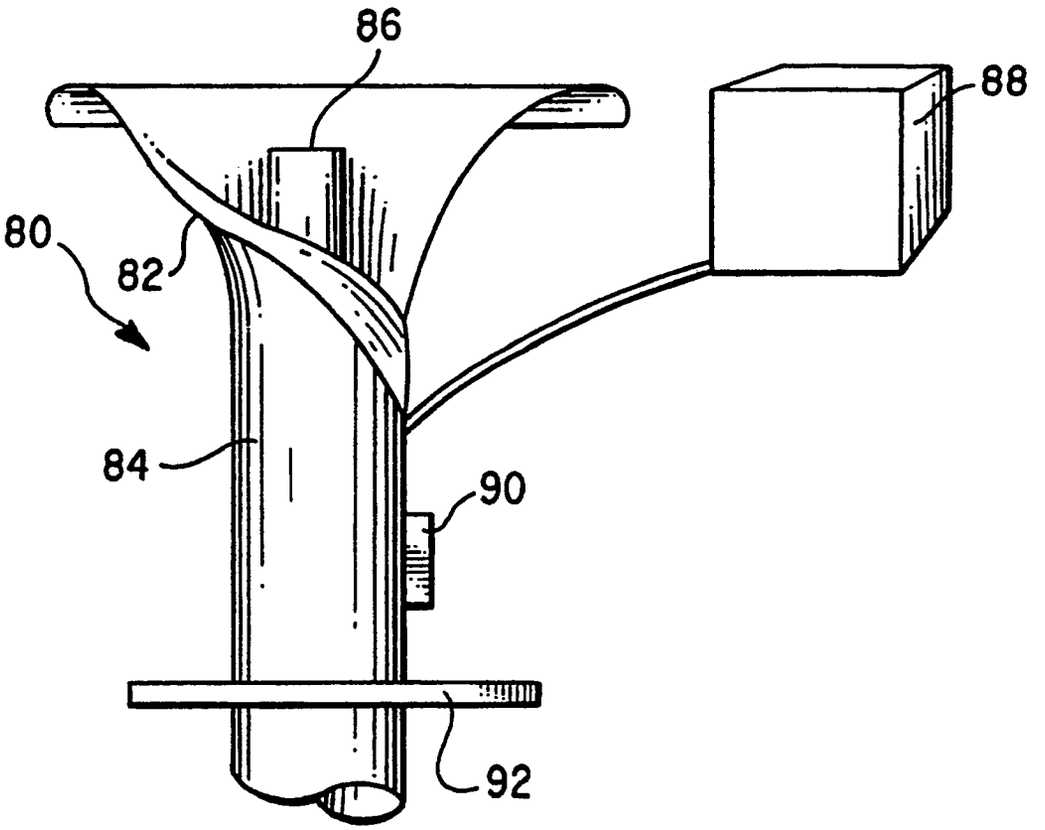

FIG. 24

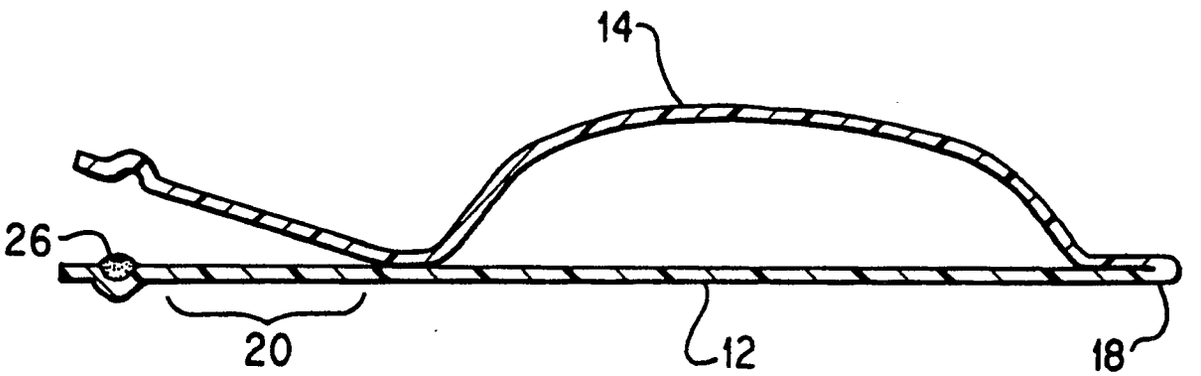

FIG. 25

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 30 1791

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-4498588 (SCOTT) * the whole document *	1, 3, 5, 6, 9-11	B65D75/30
A	US-A-3454210 (SPIEGEL) * the whole document *	1, 3-6, 9-11	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	12 JUNE 1991	SMITH C.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
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E : earlier patent document, but published on, or after the filing date
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L : document cited for other reasons

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