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(54) OXYGEN IMPERMEABLE FLEXIBLE BAG CONTAINER

SAUERSTOFFUNDURCHLÄSSIGER FLEXIBLER BEHÄLTER

CONTENEUR FLEXIBLE IMPERMEABLE A L'OXYGENE

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Description

1. Field of the Invention

[0001] The present invention relates to a bag-in-box container, for receiving, transporting, and dispensing liquids, such as wine, for example. More particularly, the present invention relates to such a bag-in-box container, which has a bag portion essentially impermeable to oxygen. Because oxygen permeation into the contents of conventional bag-in-box containers is undesirable, shortens the shelf life of the container contents, and generally contributes to deterioration and loss of quality of the contents of such conventional containers, the present invention offers a significant improvement. A method of making such a bag and the bag-in-box container is presented also.

2. Related Technology

[0002] There are many applications in which liquids are received into, transported, and later dispensed from containers. In the case of wine, for example, the glass bottle with a natural or, more recently, an artificial cork, is well known.

[0003] Another common application is known in the commercial consumer market in which wine is packaged in a box-like container made of paper board and having a collapsible inner bag which serves to hold the wine. A tap is attached to the bag by use of a fitting that is sealingly attached to the bag and also sealingly interfaces with the body of the tap. Wine is filled into the bag, and then the cap is added and the filled bag is transported entirely within the box, which serves to protect the bag, and later also serves to hold the bag with the tap protruding through a prepared opening of the box for dispensing the wine.

[0004] Conventional bag-in-box containers generally include a bag which is formed of a thin, flexible plastic sheet material comprising a multi-layer laminate of fine-dimension layers, at least one of which is resistant to permeation by oxygen. The essentially impermeable layer may be made of a metal, such as aluminum, for example. Or, the essentially impermeable layer may be made of polyester.

[0005] However, in order to attach a tap to such a bag, the plastic sheet material includes a facial layer that may be bonded, and the bag is provided with a fitting that may be bonded to the one facial layer of the laminated plastic bag. The spout for closing the fitting, and for dispensing the liquid contents of the bag sealing engages with the fitting.

[0006] In order to be made of a material which will bond to the facial layer of the bag, the bag fitting conventionally must be made of a material which is also undesirably oxygen permeable. The oxygen permeability of the material from which the fitting is made is not a criteria for selecting the material, but instead is an undesirable consequence of the need to select a material that can be bonded to the facial layer of the laminated plastic sheet material. Frequently, the bag fitting and the facial layer are conventionally formed from polyethylene. Because the conventional bag fittings allow a certain amount of oxygen permeation or penetration, the contents of the filled and closed bags are conventionally deteriorated somewhat, with the degree or extent of deterioration depending on the length of storage time, as well as such factors as ambient temperature in the area of storage.

[0007] An alternative type of bag-in-box container uses a bag in which the fitting is adhesively sealed to a bag wall. This type of bag offers speed of manufacture, but generally does not offer a hermetic type of seal between the bag and fitting.

Further bag-in-box containers are known from Au 2823977 and 1396439.

SUMMARY OF THE INVENTION

[0008] In view of the foregoing an object of the present invention is to overcome one or more of the drawbacks of conventional bag-in-box containers.

[0009] Particularly, it is an object for this invention to provide a bag for such a bag-in-box container, which includes a bag fitting formed of material that is substantially impermeable to oxygen.

[0010] Another object for this invention is to provide a bag for such a bag-in-box container in which the bag need not be bonded to the fitting, but in which the fitting is mechanically and sealingly attached to a wall of the bag.

[0011] Still another object for this invention is to provide a fitting for such a bag-in-box container in which the fitting is made of material which is essentially oxygen impermeable.

[0012] Thus, the present invention provides an oxygen impermeable flexible bag container according to claim 1.

[0013] Particularly, it is to be appreciated that an advantage according to the invention is that the bag fitting sealingly attaches to a wall of the bag mechanically and permanently, without the use of bonding between polymers. Accordingly, the bag fitting forms a mechanical attachment and seal to a wall of the bag, and may be formed of any material that is desired, because polymer bonding of the bag and fitting are not necessary.

[0014] Other objects, features, and advantages of the present invention will become apparent to those skilled in the art from a consideration of the following detailed description taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

[0015] Figure 1 is a perspective view of an exemplary bag-in-box container, having the liquid-dispensing tap in a position protruding outwardly through a specially prepared opening of the box and locked into this position for dispensing of liquid from the tap;

[0016] Figure 2 is a perspective view of the bag within the bag-in-box container of Figure 1, except that the bag as seen in Figure 2 is without the tap, and is empty and not full of liquid;

[0017] Figure 3 is a side elevation view of the bag fitting portion of the bag seen in Figure 2, along with a portion of the bag wall to which this fitting is sealingly attached;

[0018] Figure 4 is a side elevation view taken at line 4-4 of Figure 3;

[0019] Figure 5 is a greatly enlarged cross-sectional view of an encircled portion of Figure 4;

[0020] Figure 6 is an illustration of a set in the method of attaching the bag fitting to a wall of the bag, and is seen in cross sectional side elevation view with the component parts positioned preparatory to assembly;

[0021] Figure 7 is a side elevational view of a second embodiment that is not part of the invention showing in particular an alternate fitting prior to mating engagement and capture of a portion of the wall;

[0022] Figure 8 is a side elevational view of a second embodiment that is not part of the present invention showing in particular an alternate fitting upon mating engagement and capture of a portion of the wall; ,

[0023] Figure 9 is a cross-sectional view of a second embodiment of the outer fitting that is not part of the present invention taken generally about lines 9-9 of Figure 7;

[0024] Figure 10 is a greatly enlarged cross-sectional view of an encircled portion of Figure 9;

[0025] Figure 11 is a cross-sectional view of a second embodiment of the inner fitting that is not part of the present invention taken generally about lines 11-11 of Figure 7; and

[0026] Figure 12 is a greatly enlarged cross-sectional view of an encircled portion of Figure 11.

DETAILED DESCRIPTION OF THE DRAWINGS

[0027] Viewing first Figures 1 and 2 in conjunction with one another for illustrations of a bag-in-box container 10 embodying the present invention, it is seen that this container 10 includes an outer shape-retaining box 12 of corrugated paperboard and an inner flexible bag 14, which is fabricated partly of laminated plastic sheet material. As Figure 2 illustrates, the bag 14 includes a pair of generally flat and congruent walls 16 and 18, which are formed of laminated plastic sheet material, and which are sealingly secured to one another at a peripheral seal area 20. Attached to one wall 16 of the bag 14, this bag carries a bag fitting 22 which defines a passage 24 opening into the interior of the bag 14 (i.e., that is, the passage 24 opens into the variable-volume space between the walls 16 and 18).

[0028] While the bag fitting 22 will be further explained below, it is sufficient at this point to note on Figures 1 and 2 that the bag fitting 22 defines an outwardly opening groove 26 which is engageable with a wall of the box 12 in order to retain the fitting 22 and a cap/tap 28 is sealingly carried on this fitting at a position external to the box 12 in order to allow dispensing of liquid from within the bag via the cap/tap 28. Noting on Figure 1, that the cap/tap 28 includes a flange portion 30 and a tap handle portion 32, it will be understood that a user of the bag-in-box container 10 may dispense liquid from within the bag 14 via the cap/tap 28 by manually pinching the tap handle portion 32 toward the flange 30 (as is illustrated by arrow 28a).

[0029] Referring more particularly now to Figures 3, 4, and 5 in conjunction with one another, it is seen that the bag fitting 22 includes a generally conical base portion 34 from which extends a neck portion 36 outwardly of the bag 14 and wall 16. This neck portion 36 carries a collar portion 38 which is spaced from the base portion 34 so as to cooperate with a shoulder part 40 on the base portion in order to define the groove 26. A termination portion 42 of the neck portion includes features such as an outwardly extending lip 44 and an inwardly extending ring or rib 46 (best seen in Figure 4) for allowing the cap/tap 28 to be sealingly attached to the bag fitting 22.

[0030] As is best appreciated viewing Figures 4 and 5 in conjunction with one another, the passage 24 through the bag fitting 22 is cooperatively defined by a bore portion 48 defined by an outer portion 22a of the fitting 22, and by an aligned bore portion 50 of an inner portion 22b of this fitting 22. The outer (22a) and inner (22b) portions of the fitting 22 also cooperatively and sealingly capture a peripheral portion 16a of the wall 16 about a circular opening or hole 16b defined by this wall (best seen in Figure 6) in order to attach the fitting 22 sealingly to the wall 16.

[0031] Turning to Figures 5 and 6 in conjunction with one another, it is seen that the base portion 34 of the fitting portion 22a inwardly defines an annular recess 52. This recess 52 is defined cooperatively by an outer generally conical wall portion 54, which outwardly defines the base portion 34, and by an opposed inwardly disposed annular wall portion 56, which itself inwardly defines a portion of the bore 48. Received into this recess, as is seen best in Figure 5, is an inner peripheral portion 16a of the wall 16 about the opening 16b, and the annular inner fitting portion 22b. While additional details of both the outer and inner fitting portions 22a and 22b will be explained below, it is important to understand at this point that the fitting portions are a permanent "snap" fit together, and that they cooperatively capture the portion 16a of wall 16 sealingly in recess 52.

[0032] Considering now Figures 5 and 6 in detail, it is seen that the wall portion 54 inwardly defines four convergent conical surface sections 58, 60, 62, and 64, interdigitated (or alternated axially) with three divergent conical surface sections 66, 68, and 70. The wall sections just identified cooperatively define three successive and axially spaced apart annular rings or "shoulders" 72, 74, and 76 circumscribing the recess 52. In this case, the terms, "convergent" and "divergent" are considered with respect to the direction of entry of the fitting portion 22b

into the recess 52 of the fitting portion 22a, as can be readily understood from a consideration of Figure 6. The term "axial" as used herein refers to the axis of the passage 24, and of bore portions 48 and 50, cooperatively defining this passage.

[0033] Also, and similarly, the fitting portion 22b on its radially outer surface defines three convergent conical surface portions 78, 80, and 82, which are interdigitated with three divergent conical surface portions 84, 86, and 88. The convergent and divergent surface portions on fitting member 22b cooperatively define three annular ribs or "crests" 90, 92, and 94 about the fitting member 22b on its radially outer surface. As is seen in Figure 5, when the fitting portions 22a and 22b are engaged with the wall 16 at opening 16b, and the fitting portion 22b is forced into recess 52 (as is indicated by force and movement arrows on Figure 6), the peripheral wall portion 16a is captured about the fitting portion 22b, and is forced into the recess 52 along with the fitting portion 22b. Consequently, the edge of the wall 16 at opening 16b is sealingly protected from exposure to the ambient, and from exposure to any product or material placed into the bag 14. It will be understood that the ribs 90, 92, and 94 of the fitting portion 22b are forced inwardly (that is, axially) of the recess 52 past the corresponding rings 72, 74, and 76 of the fitting portion 22a. Once each rib axially passes its corresponding ring, the fitting portion 22b is permanently and sealingly captured within recess 52 of fitting portion 22a.

[0034] Consequently, the fitting portions 22a and 22b form an axially spaced or disposed series of tapered surface seatings each capturing the wall member 16 at portion 16a between confronting tapered (i.e., conical) surfaces of the fitting portions 22a and 22b. Considered differently, the wall portion 16a is engaged sealingly on tapering surfaces both inwardly and outwardly and in a "pinch" applied across the thickness of this wall portion 16a by the opposed tapered conical surfaces of the fitting portions 22a and 22b adjacent to the ribs and rings of these fitting portions. The result is a triple redundant sealing engagement (i.e., formed by three spaced apart sealing engagements on the inside of portion 16a of wall 16, and three corresponding sealing engagement on the outside of this wall) of the fitting 22 with the wall 16 at the peripheral portion 16a surrounding opening 16b.

[0035] Further to the above, it will be seen viewing Figure 5, that the fitting portion 22b defines a stepped through bore 96, a part of which defines the bore 50 and respective part of passage 24. On the other hand, the bore 96 includes a larger diameter portion 98. The bore portions 50 and 98 cooperatively define a shoulder 100 on the fitting portion 22b. As is seen in Figure 5, the annular wall portion 56 is received into the bore portion 98, and abuts against the shoulder 100. Further, the wall portion 56 defines a radially outwardly extending rib 102. This rib 102 is sealingly captured by a corresponding radially inwardly opening groove 104 defined on the bore portion 98 of the fitting portion 22b. It will be appreciated the cooperation of rib 102 in groove 104 also assists in retaining the fitting portion 22b permanently in the recess 52 of fitting portion 22a. Also, the cooperation of the rib 102 and groove 104 defines another sealing engagement of the fitting portions 22a and 22b. That is, the fitting portions 22a and 22b sealingly cooperate with one another via the interposed wall portion 16a, and also sealingly cooperate with one another directly at the rib 102 and groove 104. Stated differently, it is seen that the fitting portion 22b is sealingly and captured and retained both radially inwardly and radially outwardly by the fitting portion 22a. That is, the wall portion 54 captures the fitting portion 22b radially outwardly, and the wall portion 56 captures the fitting portion 22b radially inwardly and engages at rib 102 with the groove 104.

[0036] In view of the above, it is to be appreciated that the fitting 22 is permanently attached to wall 16 of the bag 14 before the walls 16 and 18 are sealingly attached to one another to form the completed bag 22, as is seen in Figure 2. Later, after filling of the bag 22, the cap/tap 28 is sealingly attached, and the contents of the closed bag 22 are protected from the environment. During shipping, handling, and storage of the bag 22, tap is disposed inside of the box 12, and this box greatly protects the plastic bag 14 from damage. Because the plastic sheet material from which walls 16 and 18 are formed is resistant to or essentially impermeable to penetration by oxygen, the contents of the filled and closed bag 14 are essentially protected against oxygen deterioration since oxygen cannot enter via the walls of the bag. Similarly, because the fitting 22 may be fabricated of plastic materials which are resistant to or essentially impermeable to oxygen penetration, the contents of the filled and closed bag 14 are also essentially protected against oxygen deterioration because oxygen cannot enter via the fitting 22. The cap/tap 28 is conventionally made of materials preventing oxygen penetration, so it follows that the contents of the filled and closed bag 14 are entirely protected against oxygen penetration from the atmosphere, and will not be deteriorated because of oxygenation regardless of how long the filled bag 14 is stored.

[0037] In another embodiment that is not part of the invention, shown in Figures 7 through 12, the conical surfaces are replaced with surfaces which are generally orthogonal to the axial passage 24. Specifically, the outer component 22a includes a plurality of rings 184, 186 and 188. Similarly, the inner component 22b includes a plurality of ribs 158, 160 and 162 which are configured to axially pass the plurality of indentations when the outer and inner components are mated together in a locking configuration, and, in turn, cooperatively capture a portion of a wall therebetween. Each of the ribs 158, 160, and 162 includes an inclined upper surface at the extreme distal end. With such a configuration, the inclined upper surfaces aid relative to passing the respective rings, and thereby achieving mating engagement and the capturing of the wall therebetween. In the embodiment contemplated, the mating engagement requires less force than dis-

engagement. The operation of such an embodiment is quite similar relative to the operation of the embodiment shown in Figures 1 through 6. The embodiment of Figures 7 through 12 provides an alternative which may be easier to produce on certain types of equipment.

[0038] Those skilled in the art will understand that the preceding exemplary embodiment of the present invention provides the foundation for numerous alternatives and modifications thereto. For example, it is apparent that the component parts 22a and 22b of the fitting 22 can be, but need not be, made of the same material. That is, these components may be made of materials which have the same or differing coefficients of friction with the wall 16. The use of materials with relatively high coefficients of friction may perhaps offer another way of increasing the interbonding of the bag wall 16 with the fitting 22 during the force fitting of the components 22a and 22b together. On the other hand, selection of materials with a relatively low coefficient of friction may increase the speed of assembly of the components 22a and 22b with the wall 16a of the bag 16. In each case, the sealing engagement of the fitting 22 with the wall 16a of bag 16 is not dependent upon either heat sealing nor adhesive sealing. Rather, a plurality of interference fit features and mechanical interlocking of the fitting components and the bag wall is effective to achieve a sealing permanent attachment of the fitting 22 and wall 16a. It will be understood that the wall may be preheated prior to assembly of the spout, so as to minimize wrinkles caused by the mating engagement. Accordingly, these other alternatives and modifications are also within the scope of the present invention. And, it follows that the present invention is not limited precisely to or only to that embodiment shown and described herein. Rather, the scope of the appended claims define the scope of the present invention.

Claims

1. An oxygen impermeable flexible bag container (10) including an essentially oxygen impermeable flexible bag wall (16. 18) bounding a variable-volume chamber, and an essentially oxygen impermeable bag fitting structure (22) sealingly attaching to a fine dimension flexible wall (16) of said bag (14), without heat sealing or adhesive, and defining a passage (24) communicating with said variable-volume chamber, said bag container (10) comprising; a flexible and essentially oxygen impermeable wall (16, 18) circumscribing and defining a variable volume chamber, an essentially oxygen impermeable fitting (22) for sealingly attaching to said wall and defining a passage (24) for communicating between said variable-volume chamber and ambient; said flexible wall (16) defining a hole opening (16b) to said variable-volume chamber, and including a peripheral portion circumscribing (16a) said hole (16b) ; said fitting structure (22) including a pair of fitting parts (22a, 22b) disposed on opposite side of said wall (16) and each sealingly engaging said peripheral portion; each of said pair of fitting parts (22a, 22b) defining respective interference fit features sealingly cooperable with said peripheral wall portion (16) and with a corresponding interference fit feature of the other of said pair of fitting parts 22a, 22b), wherein an outer fitting (22a) of said pair of fitting parts (22a, 22b) includes a central bore (48), a neck portion (36) structurally configured to receive a cap or tap (28) and a base portion (34) having an inwardly annular recess (52), and a inner fitting (22b) of said pair of fitting parts (22a, 22b) including a central bore (50) and a radial outward surface opposite said central bore (50), wherein the radial outward surface of the inner fitting (22b) is attachable to the inwardly annular recess (52) of the outer fitting (22a) and the radial outward surface of the second fitting (22b) and the inwardly annular recess (52) of the first fitting (22a) cooperate, to in turn, capture the bag therebetween, and wherein said outer one fitting part (22a) defines a radially inner wall portion (56) inwardly bounding said passage (24) and outwardly bounding said recess (52), and said outer one fitting part (22a) also defines a radially outer wall portion (54) outwardly bounding said recess (52); said inner fitting portion (22b) being received into said recess (52) between said inner wall portion and said outer wall portion.

2. The oxygen impermeable flexible bag container of claim 1 wherein said pair of fitting parts (22a. 22b) defines a cavity disposed in said recess (52) and radially between said inner wall portion and said outer wall portion, and said pair of fitting parts (22a, 22b) cooperatively sealingly trapping an end edge of said flexible wall (16) at a hole (16a) thereof about said passage (24) in said cavity.

3. The oxygen impermeable flexible bag container of claim 1 wherein said at least one pair of interference fit features includes said outer one of said pair of fitting parts (22a, 22b) defining a wall surface circumscribing a recess (52), and said wall surface inwardly defining at least one convergent female surface section leading to at least one divergent female surface section; said convergent and divergent female surface sections intersecting to form a shoulder (72, 74, 76) circumscribing said recess; and said inner (22b) of said pair of fitting parts (22a, 22b) defining an outwardly disposed wall surface for being received into said recess (52), said other fitting part (22b) similarly outwardly defining at least one convergent male surface portion leading to at least one divergent male surface portion; said convergent and divergent conical male surface portions intersecting to form a rib (90, 92, 94) circumscribing said wall surface of said other fitting part (22b); and said rib and said shoulder

cooperatively forming an interference fit with said flexible wall (16) interposed therebetween.

4. The oxygen impermeable flexible bag container of claim 3 wherein each of said pair of fitting parts (22a, 22b) defines plural pairs of interference fit features arranged axially along said recess.

5. The oxygen impermeable flexible bag container of claim 1 wherein the outer one of said pair of fitting parts (22a, 22b) defines a conical wall surface inwardly define a recess (52) and plural convergent conical female surface sections disposed along said recess; and a multitude of cooperative divergent conical female surface sections interdigitated with said plural convergent conical female surface sections, and said convergent and divergent conical female surface sections cooperatively defining a number of successive and axially spaced apart annular female rings circumscribing said recess; said inner one (22b) of said pair of fitting parts (22a, 22b) defining a radially outer conical male surface defining plural convergent conical male surface portions; a multitude of divergent conical male surface portions interdigitating with said plural convergent conical male surface portions: and said convergent and divergent male surface portions on said inner fitting part (22b) cooperatively defining a number of annular ribs about said inner fitting part (22b): whereby said pair of fitting parts (22a. 22b) engage with said wall (16) at the hole (16a) and forcibly dispose a peripheral portion of said wall (16) into said recess (52) and about said inner fitting part (22b), so that each rib is forced axially past a corresponding ring and sealingly pinches said wall between said inner and said outer fitting parts (22a, 22b).

6. The oxygen impermeable flexible bag container of claim 1 including an essentially oxygen impermeable flexible bag wall (16, 18) bounding a variable-volume chamber, and an essentially oxygen impermeable bag fitting structure (22) sealingly attaching to said bag wall (16) and defining a passage (24) communicating with said variable-volume chamber, said bag container (10) comprising; a flexible essentially oxygen impermeable wall (16, 18) circumscribing and defining a variable volume chamber, said wall including a peripheral portion circumscribing a hole communicating between said variable-volume chamber and ambient; an essentially oxygen impermeable fitting for sealingly attaching to said wall and defining a passage (24) for communicating between said variable-volume chamber and ambient; said fitting (22) including a pair of fitting parts (22a, 22b) disposed on opposite sides of said wall (16) and each sealingly engaging said peripheral portion; and said peripheral wall portion extending axially between said pair of fitting parts (22a, 22b) and outwardly of said passage, wherein an outer fitting of said pair of fitting parts (22a, 22b) includes a central bore (48), a neck portion (36) structurally configured to receive a cap or tap (28) and a base portion (34) extending around said peripheral portion of the wall (16) on an outer side thereof, the base portion (34) having an inwardly annular recess (52), and an inner fitting (22b) of said pair of fittings (22a, 22b) including a central bore (50) and a radial outward surface opposite said central bore (50), with the radial outward surface extending around said peripheral portion of the wall on an inner side thereof, wherein the outer fitting (22a) extends about the inner fitting (22b), and the radial outward surface of the inner fitting (22b) and the inwardly annular recess (52) of the outer fitting (22a) cooperate, to in turn, capture the bag therebetween.

Patentansprüche

1. Behälter (10) mit sauerstoffundurchlässigem flexiblem Beutel, umfassend eine im Wesentlichen für Sauerstoff undurchlässige flexible Beutelwand (16, 18), die eine Kammer mit variablem Volumen begrenzt, und eine im Wesentlichen für Sauerstoff undurchlässige Beutelanschlussstruktur (22), die ohne Heißversiegeln oder Klebstoff abdichtend an eine dünn bemessene flexible Wand (16) des Beutels (14) angesetzt ist und einen Durchlass (24) definiert, der mit der Kammer mit variablem Volumen in Verbindung steht, wobei der Beutelbehälter (10) umfasst:

eine flexible und im Wesentlichen für Sauerstoff undurchlässige Wand (16, 18), die eine Kammer mit variablem Volumen umgibt und definiert,
ein im Wesentlichen für Sauerstoff undurchlässiges Anschlussstück (22), das abdichtend an die Wand angesetzt ist und einen Durchlass (24) definiert, der eine Verbindung zwischen der Kammer mit variablem Volumen und der Umgebung bildet,
wobei die flexible Wand (16) eine Durchtrittsöffnung (16b) zu der Kammer mit variablem Volumen definiert und einen Umfangsabschnitt (16a) aufweist, der den Durchtritt (16b) umgibt,
wobei die Anschlussstruktur (22) ein Paar Anschlussteile (22a, 22b) aufweist, die auf gegenüberliegender Seite der Wand (16) angeordnet sind und jeweils abdichtend am Umfangsabschnitt eingreifen,
wobei jedes Anschlussteilepaar (22a, 22b) zugehörige Presspassungen definiert, die abdichtend mit dem Umfangswandabschnitt (16) und mit einer zugehörigen Presspassung des anderen Anschlussteilepaars (22a, 22b) kooperieren können,

wobei ein äußeres Anschlussstück (22a) des Anschlussteilepaars (22a, 22b) eine mittige Bohrung (48), einen Halsabschnitt (36), der so strukturiert ist, dass er eine Kappe oder einen Auslauf (28) aufnimmt, und einen Basisabschnitt (34) mit einer inneren ringförmigen Ausnehmung (52) aufweist, und ein inneres Anschlussstück (22b) des Anschlussteilepaars (22a, 22b) eine mittige Bohrung (50) und eine der mittigen Bohrung (50) abgewandte radiale Außenfläche aufweist, wobei die radiale Außenfläche des inneren Anschlussstücks (22b) an die innere ringförmige Ausnehmung (52) des äußeren Anschlussstücks (22a) anbringbar ist und die radiale Außenfläche des zweiten Anschlussstücks (22b) und die innere ringförmige Ausnehmung (52) des ersten Anschlussstücks (22a) so kooperieren, dass sie wiederum den Beutel zwischen sich erfassen, und
wobei das eine äußere Anschlussteil (22a) einen radialen Innenwandabschnitt (56) definiert, der innen den Durchlass (24) begrenzt und außen die Ausnehmung (52) begrenzt, und das eine äußere Anschlussteil (22a) ebenso einen radialen Außenwandabschnitt (54) definiert, der außen die Ausnehmung (52) begrenzt,
wobei der innere Anschlussabschnitt (22b) in die Ausnehmung (52) zwischen dem Innenwandabschnitt und dem Außenwandabschnitt aufgenommen ist.

2. Behälter mit sauerstoffundurchlässigem flexiblem Beutel nach Anspruch 1, wobei das Anschlussteilepaar (22a, 22b) einen Hohlraum definiert, der in der Ausnehmung (52) und radial zwischen dem Innenwandabschnitt und dem Außenwandabschnitt angeordnet ist, und das Anschlussteilepaar (22a, 22b) kooperativ abdichtend eine Endkante der flexiblen Wand (16) an einem Durchtritt (16a) darin um den Durchlass (24) in dem Hohlraum einfasst.

3. Behälter mit sauerstoffundurchlässigem flexiblem Beutel nach Anspruch 1, wobei das mindestens eine Paar Presspassungen das äußere Teil des Anschlussteilepaars (22a, 22b) umfasst, das eine Wandfläche definiert, die eine Ausnehmung (52) umgibt, und wobei die Wandfläche innen mindestens ein konvergentes weibliches Flächenstück definiert, das zu mindestens einem divergenten weiblichen Flächenstück führt, wobei das konvergente und das divergente weibliche Flächenstück sich so kreuzen, dass sie eine Abstufung (72, 74, 76) bilden, die die Ausnehmung umgibt,
und wobei das innere Teil (22b) des Anschlussteilepaars (22a, 22b) eine außen angeordnete Wandfläche definiert, die in die Ausnehmung (52) aufnehmbar ist, wobei das andere Anschlussteil (22b) gleichermaßen außen mindestens einen konvergenten männlichen Flächenabschnitt definiert, der zu mindestens einem divergenten männlichen Flächenabschnitt führt,
wobei der konvergente und der divergente konische männliche Flächenabschnitt sich so kreuzen, dass sie eine Rippe (90, 92, 94) bilden, die die Wandfläche das anderen Anschlussteils (22b) umgibt,
und wobei die Rippe und die Abstufung kooperativ eine Presspassung mit der dazwischen angeordneten flexiblen Wand (16) bilden.

4. Behälter mit sauerstoffundurchlässigem flexiblem Beutel nach Anspruch 3, wobei jedes des Anschlussteilepaars (22a, 22b) eine Mehrzahl von Paaren von Presspassungen definiert, die axial entlang der Ausnehmung angeordnet sind.

5. Behälter mit sauerstoffundurchlässigem flexiblem Beutel nach Anspruch 1, wobei das äußere Teil des Anschlussteilepaars (22a, 22b) eine konische Wandfläche definiert, innen eine Ausnehmung (52) und mehrere konvergente konische weibliche Flächenstücke definiert, die entlang der Ausnehmung angeordnet sind,
und eine Mehrzahl von kooperativen divergenten konischen weiblichen Flächenstücken, die mit den mehreren konvergenten konischen weiblichen Flächenstücken ineinander greifen, und wobei die konvergenten und divergenten konischen weiblichen Flächenstücke kooperativ eine Anzahl an aufeinander folgenden und axial beabstandeten kreisförmigen weiblichen Ringen definieren, die die Ausnehmung umgeben,
wobei das innere Teil (22b) des Anschlussteilepaars (22a, 22b) eine radial äußere konische männliche Fläche definiert, die mehrere konvergente konische männliche Flächenabschnitte definiert,
wobei eine Mehrzahl von divergenten konischen männlichen Flächenabschnitten mit den mehreren konvergenten konischen männlichen Flächenabschnitten ineinander greifen,
und wobei die konvergenten und divergenten männlichen Flächenabschnitte auf dem inneren Anschlussteil (22b) kooperativ eine Anzahl an kreisförmigen Rippen um das innere Anschiussteil (22b) definieren, wodurch das Anschlussteilepaar (22a, 22b) bei der Wand (16) an dem Durchtritt (16a) eingreift und zwangsweise einen Umfangsabschnitt der Wand (16) in die Ausnehmung (52) und um den inneren Anschlussteil (22b) anordnet, so dass jede Rippe axial über einen zugehörigen Ring getrieben wird und die Wand abdichtend zwischen die inneren und äußeren Anschlussteile (22a, 22b) klemmt.

6. Behälter mit sauerstoffundurchlässigem flexiblem Beutel nach Anspruch 1, umfassend eine im Wesentlichen für Sauerstoff undurchlässige flexible Beutelwand (16, 18), die eine Kammer mit variablem

Volumen begrenzt, und eine im Wesentlichen für Sauerstoff undurchlässige Beutelanschlussstruktur (22), die abdichtend an eine Beutelwand (16) angesetzt ist und einen Durchlass (24) definiert, der mit der Kammer mit variablem Volumen in Verbindung steht, wobei der Beutelbehälter (10) umfasst:

eine flexible im Wesentlichen für Sauerstoff undurchlässige Wand (16, 18), die eine Kammer mit variablem Volumen umgibt und definiert, wobei die Wand einen Umfangsabschnitt aufweist, der einen Durchtritt umgibt, der eine Verbindung zwischen der Kammer mit variablem Volumen und der Umgebung bildet,
ein im Wesentlichen für Sauerstoff undurchlässiges Anschlussstück, das abdichtend an die Wand angesetzt ist und einen Durchlass (24) definiert, der eine Verbindung zwischen der Kammer mit variablem Volumen und der Umgebung bildet,
wobei das Anschlussstück (22) ein Paar Anschlussteile (22a, 22b) aufweist, die auf gegenüberliegenden Seiten der Wand (16) angeordnet sind und jeweils abdichtend am Umfangsabschnitt eingreifen,
und wobei der Umfangswandabschnitt sich axial zwischen dem Anschlussteilepaar (22a, 22b) und außerhalb des Durchlasses erstreckt,
wobei ein äußeres Anschlussstück des Anschlussteilepaars (22a, 22b) eine mittige Bohrung (48), einen Halsabschnitt (36), der so strukturiert ist, dass er eine Kappe oder einen Auslauf (28) aufnimmt, und einen Basisabschnitt (34) aufweist, der sich um den Umfangsabschnitt der Wand (16) an ihrer Außenseite erstreckt,
wobei der Basisabschnitt (34) eine innere ringförmige Ausnehmung (52) aufweist, und ein inneres Anschlussstück (22b) des Anschlussteilepaars (22a, 22b) eine mittige Bohrung (50) und eine der mittigen Bohrung (50) abgewandte radiale Außenfläche aufweist, wobei die radiale Außenfläche sich um den Umfangsabschnitt der Wand an ihrer Innenseite erstreckt, wobei das äußere Anschlussstück (22a) sich um das innere Anschlussstück (22b) erstreckt und die radiale Außenfläche des inneren Anschlussstücks (22b) und die innere ringförmige Ausnehmung (52) des äußeren Anschlussstücks (22a) so kooperieren, dass sie wiederum den Beutel zwischen sich erfassen.

Revendications

1. Conteneur à sac flexible imperméable à l'oxygène (10) comprenant une paroi de sac flexible pratiquement imperméable à l'oxygène (16, 18) délimitant une chambre à volume variable, et une structure de raccord de sac pratiquement imperméable à l'oxygène (22) liée de façon étanche à une paroi flexible de petite dimension (16) dudit sac (14), sans avoir recours à un thermoscellage ou à un adhésif, et définissant un passage (24) communiquant avec ladite chambre à volume variable, ledit conteneur à sac (10) comprenant : une paroi flexible et pratiquement imperméable à l'oxygène (16, 18) entourant et définissant une chambre à volume variable, un raccord pratiquement imperméable à l'oxygène (22) destiné à être lié de façon étanche à ladite paroi et définissant un passage (24) destiné à une communication entre ladite chambre à volume variable et l'atmosphère ambiante, ladite paroi flexible (16) définissant une ouverture d'orifice (16b) vers ladite chambre à volume variable, et comprenant une partie périphérique (16a) entourant ledit orifice (16b), ladite structure de raccord (22) comprenant une paire de parties de raccord (22a, 22b) disposées sur les côtés opposés de ladite paroi (16) et chacune s'engageant de façon étanche avec ladite partie périphérique, chaque partie de ladite paire de parties de raccord (22a, 22b) définissant des éléments de raccord par serrage respectifs pouvant coopérer de façon étanche avec ladite partie de paroi périphérique (16) et avec un élément de raccord par serrage correspondant de l'autre partie de ladite paire des parties de raccord (22a, 22b) où un raccord extérieur (22a) de ladite paire des parties de raccord (22a, 22b) comprend un alésage central (48), une partie de col (36) configurée structurellement afin de recevoir un bouchon ou un robinet (28) et une partie de base (34) présentant un évidement annulaire vers l'intérieur (52), et un raccord intérieur (22b) de ladite paire de parties de raccord (22a, 22b) comprenant un alésage central (50) et une surface radiale vers l'extérieur opposée audit alésage central (50), où la surface radiale vers l'extérieur du raccord intérieur (22b) peut être liée à l'évidement annulaire vers l'intérieur (52) du raccord extérieur (22a) et la surface radiale vers l'extérieur du deuxième raccord (22b) et l'évidement annulaire vers l'intérieur (52) du premier raccord (22a) coopèrent, pour capturer le sac entre ceux-ci, et où ladite partie de raccord extérieur (22a) définit une partie de paroi radialement intérieure (56) délimitant vers l'intérieur ledit passage (24) et délimitant vers l'extérieur ledit évidemment (52), et ladite partie de raccord extérieur (22a) définit également une partie de paroi radialement extérieure (54) délimitant vers l'extérieur ledit évidement (52), ladite partie de raccord intérieur (22b) étant reçue dans ledit évidemment (52) entre ladite partie de paroi intérieure et ladite partie de paroi extérieure.

2. Conteneur à sac flexible imperméable à l'oxygène selon la revendication 1, dans lequel ladite paire de parties de raccord (22a, 22b) définit une cavité ménagée dans ledit évidement (52) et située radiale-

ment entre ladite partie de paroi intérieure et ladite partie de paroi extérieure, et ladite paire de parties de raccord (22a, 22b) piégeant en coopération et de façon étanche un bord d'extrémité de ladite paroi flexible (16) au niveau d'un orifice (16a) de celle-ci autour dudit passage (24) dans ladite cavité.

3. Conteneur à sac flexible imperméable à l'oxygène selon la revendication 1, dans lequel ladite au moins une paire d'éléments de raccord par serrage comprend ladite partie extérieure de ladite paire de parties de raccord (22a, 22b) définissant une surface de paroi entourant un évidement (52), et ladite surface de paroi définissant vers l'intérieur au moins une section de surface femelle convergente allant vers au moins une section de surface femelle divergente, lesdites sections de surface femelle convergente et divergente se coupant pour former un épaulement (72, 74, 76) entourant ledit évidement, et ladite partie intérieure (22b) de ladite paire de parties de raccord (22a, 22b) définissant une surface de paroi disposée vers l'extérieur destinée à être reçue dans ledit évidement (52), ladite autre partie de raccord (22b) définissant de façon similaire vers l'extérieur au moins une partie de surface mâle convergente allant jusqu'à au moins une partie de surface mâle divergente, lesdites parties de surface mâle conique convergente et divergente se coupant pour former une nervure (90, 92, 94) entourant ladite surface de paroi de ladite autre partie de raccord (22b), et ladite nervure et ledit épaulement formant en coopération un raccord par serrage avec ladite paroi flexible (16) intercalée entre ceux-ci.

4. Conteneur à sac flexible imperméable à l'oxygène selon la revendication 3, dans lequel chaque partie de ladite paire de parties de raccord (22a, 22b) définit une pluralité de paires d'éléments de raccord par serrage agencés axialement le long dudit évidement.

5. Conteneur à sac flexible imperméable à l'oxygène selon la revendication 1, dans lequel la partie extérieure de ladite paire de parties de raccord (22a, 22b) définit une surface de paroi conique définissant vers l'intérieur un évidement (52) et une pluralité de sections de surface femelle conique convergente disposées le long dudit évidement, et une multitude de sections de surface femelle conique divergente coopérantes entrecroisées avec ladite pluralité de sections de surface femelle conique convergente et lesdites sections de surface femelle conique convergente et divergente définissant en coopération un certain nombre de bagues femelles annulaires successives et espacées axialement entourant ledit évidement, ladite partie intérieure (22b) de ladite paire de parties de raccord (22a, 22b) définissant une surface mâle conique radialement extérieure définissant une pluralité de parties de surface mâle conique convergente, une multitude de parties de surface mâle conique divergente entrecroisées avec ladite pluralité de parties de surface mâle conique convergente, et lesdites parties de surface mâle convergente et divergente sur ladite partie de raccord intérieur (22b) définissant en coopération un certain nombre de nervures annulaires autour de ladite partie de raccord intérieur (22b), grâce à quoi ladite paire de parties de raccord (22a, 22b) s'engage avec ladite paroi (16) au niveau de l'orifice (16a) et déploient de manière forcée une partie périphérique de ladite paroi (16) jusque dans ledit évidemment (52) et autour de ladite partie de raccord intérieur (22b), de sorte que chaque nervure est forcée axialement au-delà d'une bague correspondante et pince de façon étanche ladite paroi entre lesdites parties de raccords intérieur et extérieur (22a, 22b).

6. Conteneur à sac flexible imperméable à l'oxygène selon la revendication 1, comprenant une paroi de sac flexible pratiquement imperméable à l'oxygène (16, 18) délimitant une chambre à volume variable, et une structure de raccord de sac pratiquement imperméable à l'oxygène (22) liée de façon étanche à ladite paroi de sac (16) et définissant un passage (24) communiquant avec ladite chambre à volume variable, ledit conteneur à sac (10) comprenant : une paroi flexible pratiquement imperméable à l'oxygène (16, 18) entourant et définissant une chambre à volume variable, ladite paroi comprenant une partie périphérique entourant un orifice communiquant entre ladite chambre à volume variable et l'atmosphère ambiante, un raccord pratiquement imperméable à l'oxygène destiné à être attaché de façon étanche à ladite paroi et définissant un passage (24) destiné à une communication entre ladite chambre à volume variable et l'atmosphère ambiante, ledit raccord (22) comprenant une paire de parties de raccord (22a, 22b) disposées sur les côtés opposés de ladite paroi (16) et chacune s'engageant de façon étanche avec ladite partie périphérique, et ladite partie de paroi périphérique s'étendant axialement entre ladite paire de parties de raccord (22a, 22b) et vers l'extérieur dudit passage, où un raccord extérieur de ladite paire de parties de raccord (22a, 22b) comprend un alésage central (48), une partie de col (36) configurée structurellement pour recevoir un bouchon ou un robinet (28) et une partie de base (34) s'étendant autour de ladite partie périphérique de la paroi (16) sur un côté extérieur de celle-ci, la partie de base (34) comportant un évidement annulaire vers l'intérieur (52), et un raccord intérieur (22b) de ladite paire de raccords (22a, 22b) comprenant un alésage central (50) et une surface radiale vers l'extérieur opposée audit alésage central (50), la surface radiale vers l'extérieur s'étendant autour de ladite partie périphérique de la paroi sur un côté intérieur de celle-ci, où

le raccord extérieur (22a) s'étend autour du raccord intérieur (22b), et la surface radiale vers l'extérieur du raccord intérieur (22b) et l'évidement annulaire vers l'intérieur (52) du raccord extérieur (22a) coopèrent pour capturer le sac entre ceux-ci.

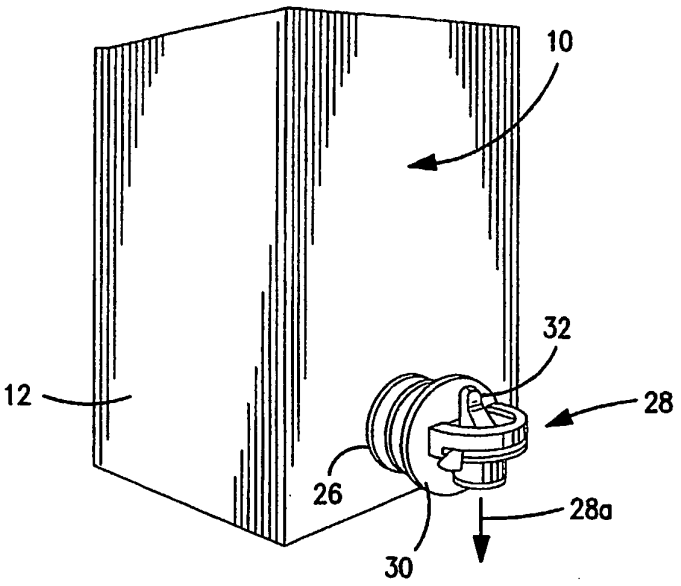

FIG. 1

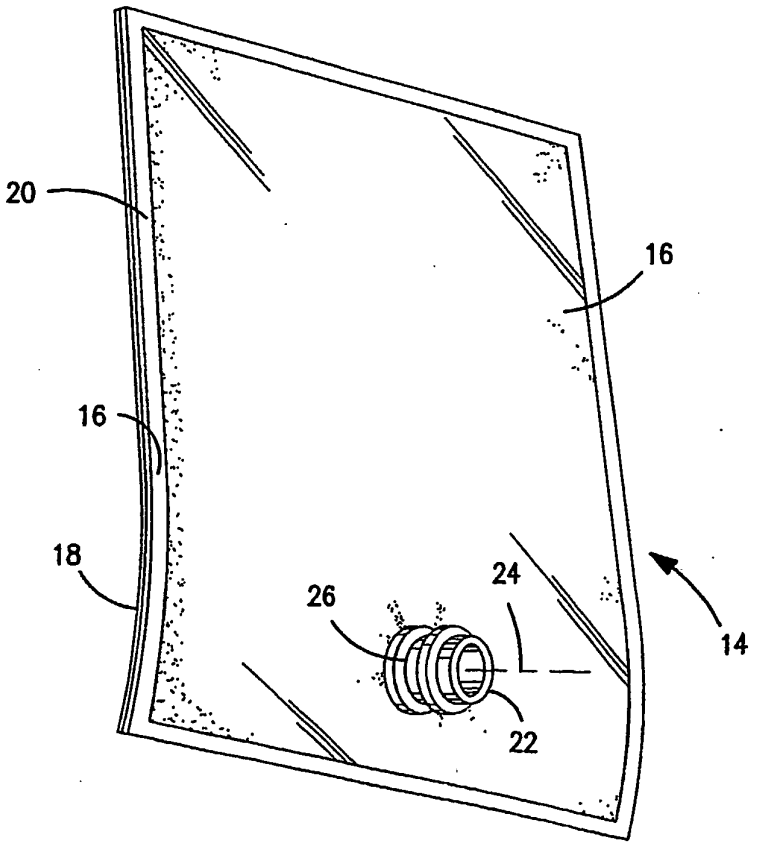

FIG. 2

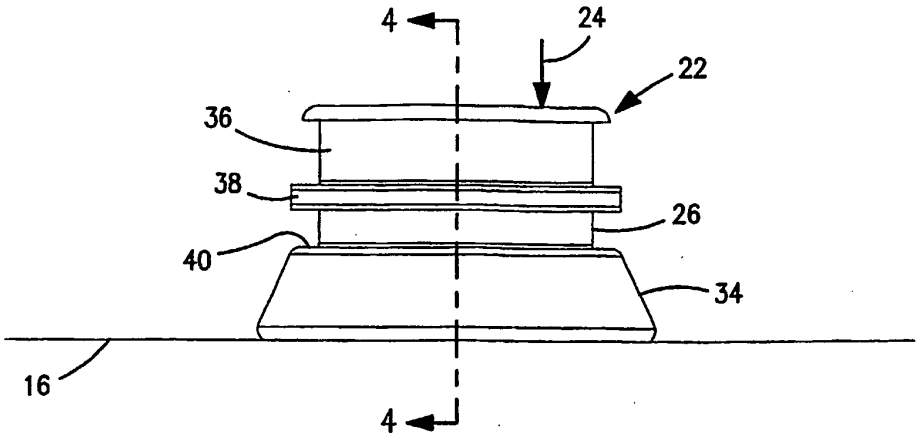

FIG. 3

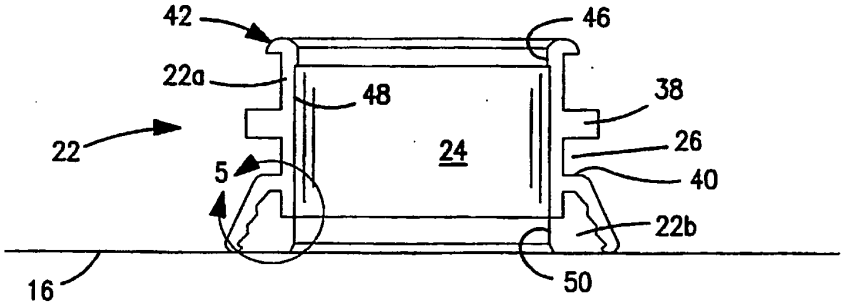

FIG. 4

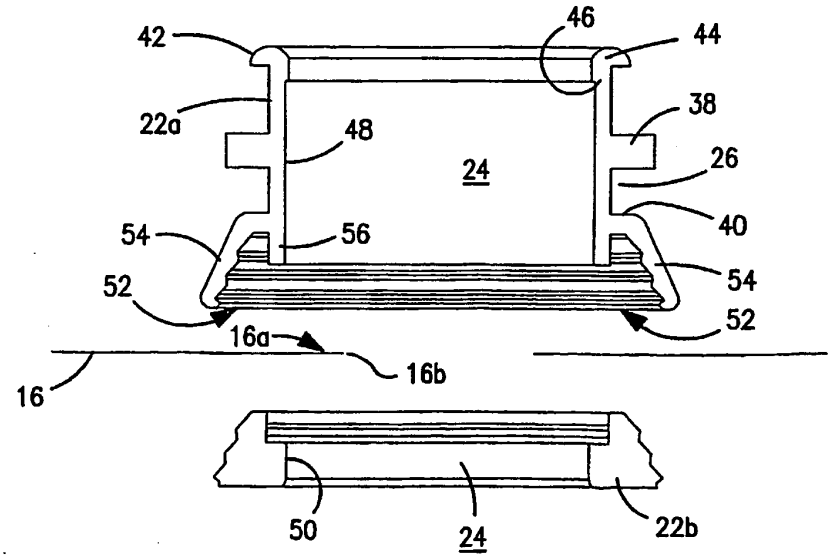

FIG. 6

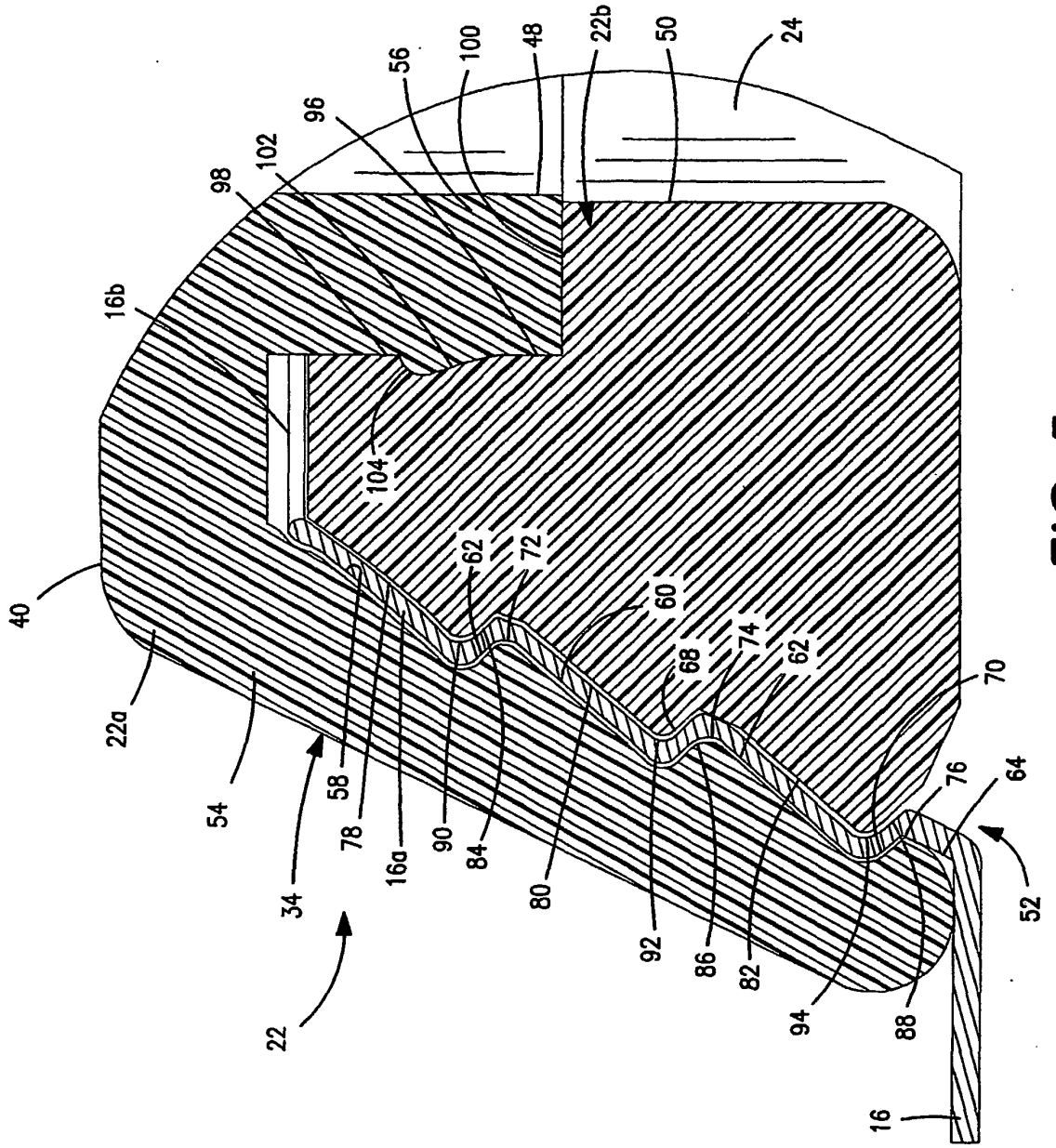
40
22a
54
58
78
16a
90
84
80
92
86
82
94
88
16
52
64
76
70
34
22
62
72
60
68
74
62
104
16b
98
102
96
56
100
48
22b
50
24

FIG. 5

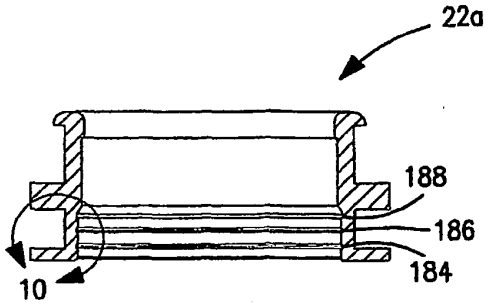

FIG. 9

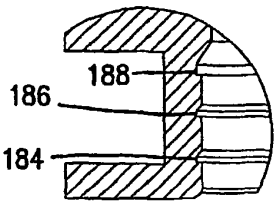

FIG. 10

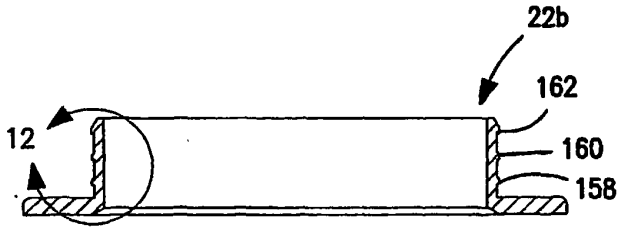

FIG. 11

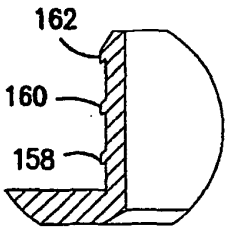

FIG. 12

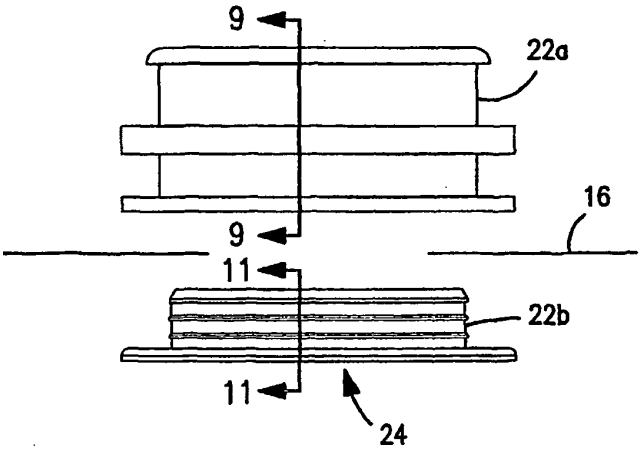

FIG. 7

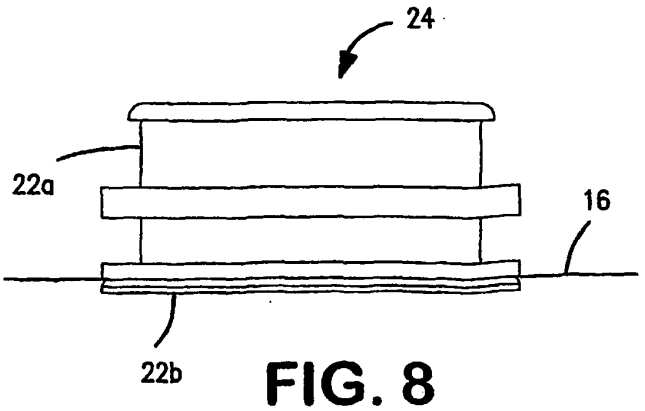

FIG. 8