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(54) Title: MULTI-FUNCTION CONDIMENT CONTAINER

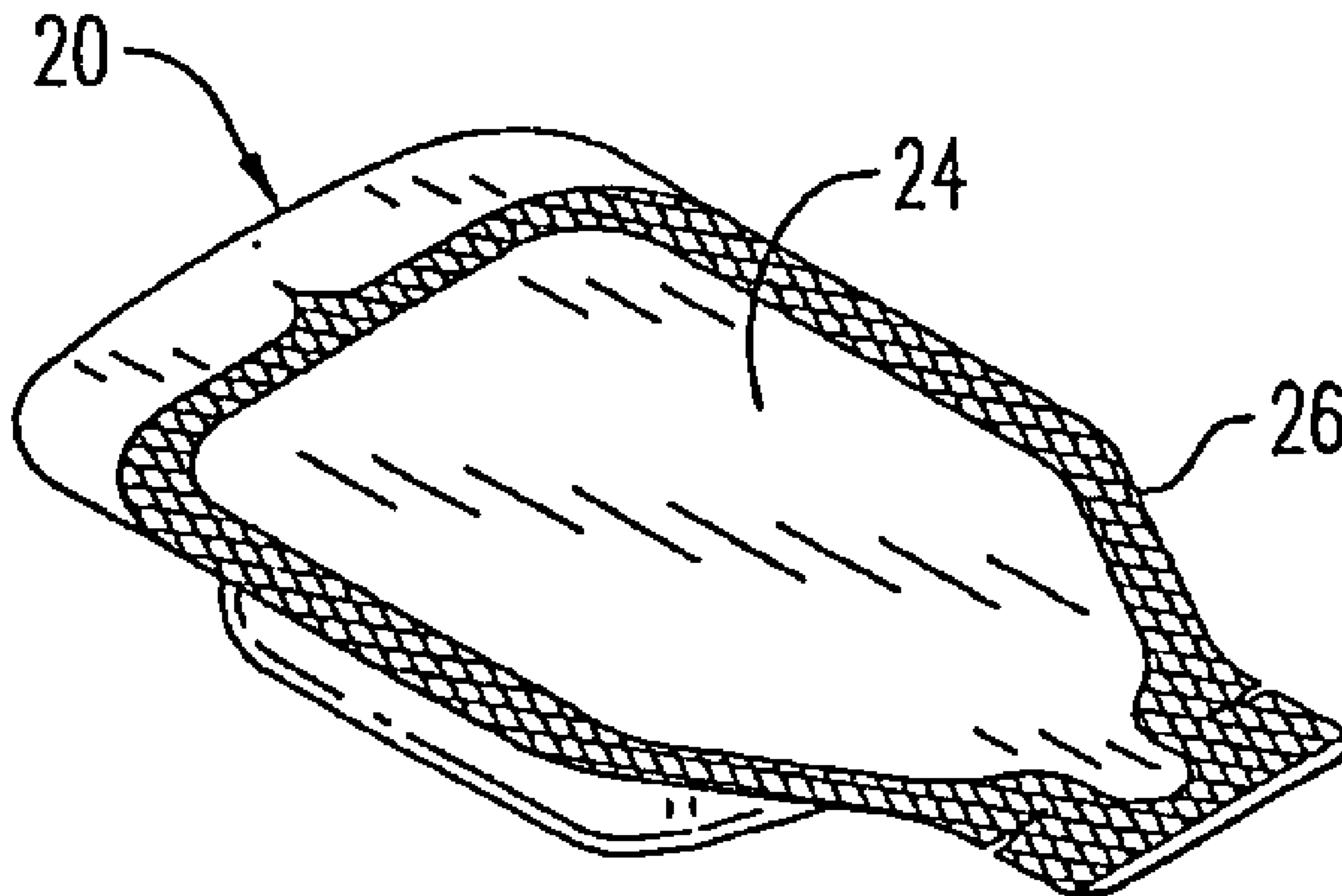


FIG. 1

(57) Abrégé/Abstract:

A container for condiments includes a container portion having generally planar bottom, a generally parallel flange, and defining a cavity having a discharge spout adjacent the parallel flange. The container further includes a generally planar cover portion



(57) **Abrégé(suite)/Abstract(continued):**

fashioned from a material more flexible than the material of the container portion and secured to the flange by an adhesive. The container preferably includes a weakened region transversely aligned with the spout but not having fluid communication therewith. Moreover, the container preferably includes a peel initiating structure aligned with the spout but spaced therefrom effective to reduce the peeling force required to separate the cover portion from the container portion.

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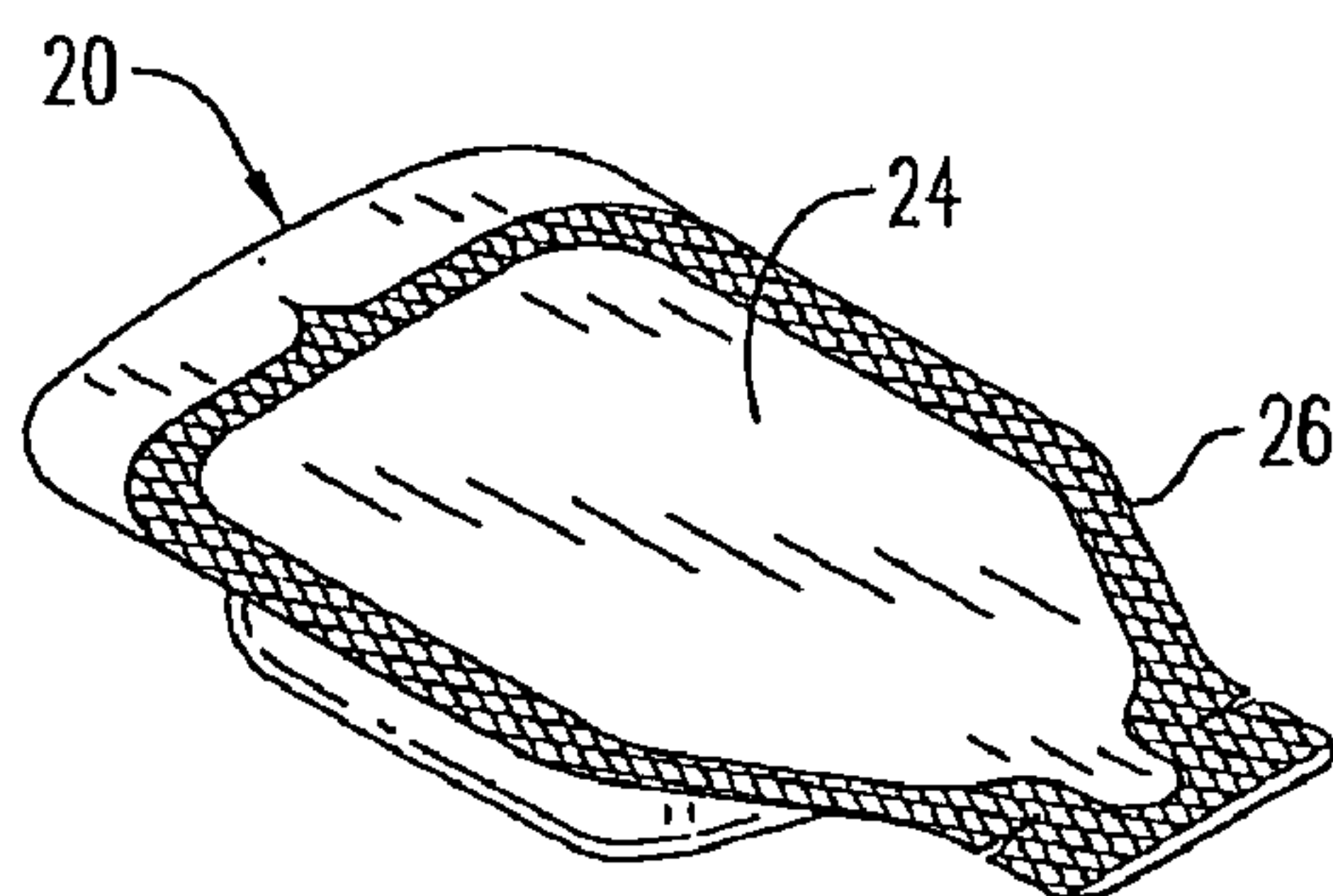
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[Continued on next page]

(54) Title: MULTI-FUNCTION CONDIMENT CONTAINER

**FIG. 1**

(57) Abstract: A container for condiments includes a container portion having generally planar bottom, a generally parallel flange, and defining a cavity having a discharge spout adjacent the parallel flange. The container further includes a generally planar cover portion fashioned from a material more flexible than the material of the container portion and secured to the flange by an adhesive. The container preferably includes a weakened region transversely aligned with the spout but not having fluid communication therewith. Moreover, the container preferably includes a peel initiating structure aligned with the spout but spaced therefrom effective to reduce the peeling force required to separate the cover portion from the container portion.

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MULTI-FUNCTION CONDIMENT CONTAINER

BACKGROUND OF THE INVENTION:

[0001] The present invention relates generally to packaging for condiments. More particularly, the present invention concerns condiment
5 packaging adapted for opening in at least two different ways.

[0002] Condiment packaging has evolved over the years, starting with basic glass bottles and jars for display and sale of condiments, including without limitation ketchup, mustard, mayonnaise, sauces, and the like. That basic packaging later included larger capacity bottles and jars, and then
10 containers made from synthetic plastic materials. Eventually, the packaging concepts turned to providing packaging suitable for individual portions of the condiments.

[0003] Individual packaging for condiments has, itself, seen changes. At one time, the packaging was simply an empty cup that could be filled with a
15 condiment from a large capacity condiment dispenser that may, for example, have included a pump or other suitable dispensing device. For many years, condiments have been available in individual portion packets or sachets which seal the condiment between a pair of generally planar sheets of material. See, for example, U.S. Patent No. 3,315,801. One or more
20 weakened zone may be provided to simplify the act of opening the packet to access the condiment contained therein.

[0004] Condiment packages having a generally rectangular receptacle portion covered with a substantially planar sheet have been long known also. See, for example, U.S. Patent 2,705,579. Such condiment packages
25 were later provided with breakaway corners and exposed corners for the covering material, thereby providing different access means for the condiment packaged therein. See, for example, U.S. Patent Application Publication Nos. 2003/0183637, and 2002/0100760.

[0005] Packages for varied products are also known where the receptacle
30 portion has a generally frustoconical shape with a spout at one side. See,

for example, U.S. Patent Nos. 2,898,003, 3,660,960, and 4,863,036.

Typically, receptacles having this configuration have been used for relatively low viscosity products such as milk and cream.

5 [0006] Squeezable packages for products are also known where the package has a spout at one end and the forming materials are weakened in the vicinity of the spout to permit access to the contents thereof. See for example, U.S. Patent Nos. 5,529,224, 4,921,137, and WO 2007/126817.

10 [0007] Containers for liquids have also been proposed which permit dual access modes. For example, one mode allowing squeezing for product removal and another mode allowing dipping for product removal. See, for example, U.S. Patent Application Publication No. 2006/0278562 (commonly owned, the entire contents of which are incorporated herein by this reference thereto). It has been proposed to use different opening methods where the product has different consistencies. See, for example, Fr. Patent No.
15 2,801,570. Moreover, various designs for containers which permit the varied kinds of access have also been disclosed. See, for example, U.S. Patent Application Publication No. 2007/0164045.

[0008] Notwithstanding the development of condiment containers, a number of difficulties are known to exist with available containers. More
20 particularly, during use, the containers tend to be messy making them imperfect for use by children, and for use in vehicles when provided at drive-thru food sources. In addition, in recognition of environmental concerns, some retailers impose restrictions on the types of materials that may be used in products sold or otherwise provided through their retail outlets. When
25 dealing with individual portion sizes of condiments, shelf-life stability for the condiments therein becomes important to maintain wholesomeness of the condiments. That stability may result from a variety of factors including for example permeability of container materials to oxygen.

30 SUMMARY OF SELECTED ASPECTS OF THE INVENTION:

[0009] For purposes of this invention, the word "condiment" should be interpreted broadly so as to include substances used to enhance larger food

portions. Thus, as used in this application, "condiment" is intended to cover traditional condiments such as ketchup, mustard, mayonnaise, tartar sauce, and the like, as well as to encompass, without limitation, other comestibles such as sauces, jellies, jams, honey, and the like.

5 **[0010]** The improved condiment container according to this invention includes a cover portion and a container portion. The container portion preferably includes a receptacle proportioned to receive a predetermined volume of a condiment. Typically, the predetermined volume corresponds to the quantity of the condiment that a consumer may personally use during
10 consumption of a meal.

[0011] Preferably, the receptacle of the container portion includes a generally planar bottom surface with a nominal length and a nominal width. The bottom surface provides a stable surface to support the condiment container during certain aspects of its use by a consumer. The receptacle
15 also has a nominal depth selected in relation to the nominal width and nominal length to provide a receptacle that is low, wide, and stable against lateral tipping when a food item is thrust or poked into the receptacle.

[0012] The container portion preferably includes a flange extending substantially continuously around the receptacle. Preferably, the flange is
20 generally planar, is spaced from the generally planar bottom surface, and parallel thereto. At one side of the receptacle and at the position of the flange, a spout is provided. The spout has cross-sectional area which is smaller than the cross-sectional area of the opening at the upper edge of the receptacle. In this manner, access to the condiment through the spout is
25 much more restricted than access to the condiment through the upper edge of the receptacle.

[0013] Preferably, the container portion is fashioned from a material having a first bending stiffness sufficient that the receptacle retains its shape, even in the absence of the cover portion. Moreover, that first bending stiffness is
30 also sufficient to ensure that the flange will retain its shape and orientation relative to the receptacle, even in the absence of the cover portion. To this end, container portion may be fabricated from a material selected from the

group consisting of polyethylene terephthalate (PET), amorphous polyethylene terephthalate (APET), oriented polyethylene terephthalate (OPET), metalized polyethylene terephthalate (MET-PET), polyethylene (PE), low density polyethylene (LDPE), linear low density polyethylene (LLDPE), metallocene linear low density polyethylene (mLLDPE), high density polyethylene (HDPE), metallocene polyethylene (mPE), ethylene vinyl acetate (EVA), polypropylene (PP), metalized oriented polypropylene (mOPP), polystyrene (PS), high impact polystyrene (HIPS), foil, ethylene vinyl alcohol (EVOH), polyamide, Nylon, polyvinyl chloride (PVC), biaxially oriented materials, materials complying with 21 C.F.R. Part 177, and combinations thereof. While the container portion may comprise a single layer of material, the container portion may also be fabricated of multiple layers bonded, coextruded or otherwise formed together into a cohesive structure, where one or more of the layers is selected from the group of materials set forth above. Regardless of the particular composition used for the lid portion, all surfaces of the lid portion which face the receptacle are required to be food-safe.

[0014] The thickness of the container portion may preferably lie in the range of about 3 mils to about 20 mils – a mil being 0.001 inches. Depending upon the particular material and the thickness selected, it may also be desirable to further stiffen the bottom surface of the receptacle. Such stiffening may be accomplished by embossing a three-dimensional pattern into the bottom surface, thereby increasing its bending stiffness. A logo may be used to provide that three-dimensional pattern, if desired.

[0015] The cover portion is substantially planar and preferably is configured to have a perimeter substantially the same as the perimeter of the container portion. Moreover, the cover portion substantially covers the flange of the container portion. The cover portion, however, is preferably fabricated from a material having a second bending stiffness, where the bending stiffness of the cover portion is lower than the bending stiffness of the container portion. This difference in stiffness causes the cover portion to

be more flexible and more readily separable from the container portion along the flange.

[0016] The material from which the cover portion is fabricated may be the same as, or different from, the material used for the container portion.

- 5 Accordingly, the material of the cover portion may be selected from the group consisting of PET, APET, OPET, MET-PET, PE, LDPE, LLDPE, mLLDPE, HDPE, mPE, EVA, PP, mOPP, PS, HIPS, foil, EVOH, polyamide, Nylon, PVC, biaxially oriented materials, materials complying with 21 C.F.R. Part 177, and combinations thereof. Typically, the thickness of the cover
- 10 portion will lie in the range of about 1 mil to about 5 mils. While the cover portion may comprise a single layer of material, the cover portion may also be fabricated of multiple layers bonded, co-extruded or otherwise formed together into a cohesive structure, where one or more of the layers is selected from the group of materials set forth above. Regardless of the
- 15 particular composition used for the lid portion, all surfaces of the lid portion which face the receptacle are required to be food-safe.

- [0017]** To hold the cover portion and the container portion together in a condiment package, an adhesive is preferably positioned between the cover portion and the container portion, in the flange area, and surrounding the top
- 20 edge of the receptacle. The adhesive preferably is a food-grade adhesive and may be conventionally cured, for example, thermally, electromagnetically, or time cured. Preferably, the adhesive is integral with the cover portion and/or the container portion. Application of heat and pressure can be used to cause the adhesive to bond the cover portion
- 25 and/or the container portion. Alternatively, adhesive may be applied around the receptacle of the container portion in a separate step. Preferably the adhesive is applied such that the adhesive defines a non-bonded region in alignment with the spout, although the adhesive otherwise surrounds the spout. If desired, pressure may be applied to assure that the adhesive
- 30 bonds the cover portion and the container portion so as to define a sealed compartment defined by the receptacle and the cover portion. Moreover, the adhesive is applied such that a non-bonded region exists between the lid

portion and the flange of the container portion in general alignment with the spout.

[0018] Preferably, the non-bonded region is located opposite the spout and at the periphery of the container assembly. The non-bonded region is operable to define a lift tab at an edge of the lid portion. The lift tab is graspable so that it can be pulled away from the flange of the container portion so as to expose the receptacle and the contents thereof. Moreover, the adhesive is applied such that a peel-initiating region, such as a substantially angular region, partially defines an edge of the non-bonded region. The peel-initiating region is engaged as the lid portion is pulled by the tab from the container portion before the lid portion engages the full linear extent of the adhesive extending from side to side of the receptacle, and offers reduced resistance to separation between the lid portion and the container portion of the assembled package. For example, the required opening force may lie in the range of 1 to 5 lbs. Depending upon the opening scheme desired, the non-bonded region and the peel-initiator may be positioned in alignment with the spout or on the opposite side of the receptacle. Regardless of the position, when the lid portion is peeled back away from the container portion, the receptacle is exposed so as to be available for dipping a food item in the condiment.

[0019] For access to the spout, a weakened area is preferably positioned so as to be transverse to the spout. The weakened area may be provided by mechanically cutting or fracturing the package materials in the vicinity of the spout. The weakened area may be fashioned by cutting the lid portion and the container portion so that a pair of aligned slits straddle the spout. Alternatively, the weakened area may be provided by laser scoring either the lid portion or the container portion or both. The end of the assembled container may then be broken away along the weakened area to expose the spout. By then squeezing the assembled container, the condiment will be released through the spout in a controlled manner.

[0020] In the assembled package, the adhesive preferably has sufficient strength that the container will resist bursting when subjected to a force of 50 lbs. or greater, and preferably when subject to a force of 70 lbs. or greater.

[0021] If desired, the container assembly may be adapted for attachment to the sidewall of a paperboard container. To this end, a pair of slits may be provided in the container and extending through both the lid portion and the container portion, where the slits are symmetrically disposed and cooperate to define a pair of ears. The ears can be bent out of the plane of the flange to define an angular (when viewed from the side) hook. Resilience of the materials used to fabricate the lid portion and the container portion cooperates to pinch an edge of the paperboard container. To further enhance the grip between the ears and an associated paperboard container, the surface of each ear may be suitable treated. For example, a tacky coating, or a roughened surface may be provided for such a purpose.

[0022] If desired, either or both of the lid portion and the container portion may include an oxygen control barrier or an oxygen scavenger layer. Such a barrier layer can be helpful to reduce or eliminate degradation of the condiment packaged in the container assembly. If desired, either or both of the lid portion and the container portion may be opaque. Opaqueness may enhance the packaged product where exposure to light degrades the product over time.

[0023] When the condiment packaged in the container is ketchup, the materials for the lid portion and the container portion are preferably selected such that the packaged condiment will have a shelf-life of at least about six months. One technique for evaluating shelf-life involves use of a colorimeter operating in the $L^*a^*b^*$ color space. Shelf-life may be evaluated by monitoring degradation of the color components of the packaged product according to measurements in that color space. For example, shelf-life may be determined by requiring that the L^* and/or the ratio of a^*/b^* does not degrade more than a specified amount during the specified period, e.g., by less than 10% over a six-month period.

BRIEF DESCRIPTION OF THE DRAWINGS:

[0024] Many objects and advantages of the present invention will be apparent to those skilled in the art when this written specification is read in conjunction with the appended drawings wherein like reference numerals are
5 applied to like elements and wherein:

FIG. 1 is a perspective view of the condiment container;

FIG. 2 is an inverted perspective view of a condiment container with the bottom surface positioned on top;

FIG. 3 is a bottom plan view of the condiment container;

10 **FIG. 4** is a side elevational view of the condiment container;

FIG. 5 is a top plan view of the condiment container;

FIG. 6 is an end elevational view of the condiment container;

FIG. 7 is a top plan view of a second embodiment of the condiment container;

15 **FIG. 8** is a top plan view of a third embodiment of the condiment container;

FIG. 9 is an enlarged cross-sectional view taken along the line 9-9 of **FIG. 5**;

FIG. 10 is an enlarged detail view of spout end encircled **FIG. 9**;

20 **FIG. 11** depicts the condiment container opened for squeeze application;

FIG. 12 is a cross-sectional view of the condiment container of **FIG. 1** showing access for dipping;

25 **FIG. 13** is a perspective view of a fourth embodiment of the condiment container viewed from the top;

FIG. 14 is a cross-sectional view of the fourth embodiment of the condiment container taken along the line 14-14 of **FIG. 13**;

FIG. 15 is a perspective view of the fourth embodiment of the condiment container;

30 **FIG. 16** is a top plan view of a fifth embodiment of the condiment container;

FIG. 17 is a side elevational view of the fifth embodiment of the condiment container;

FIG. 18 depicts use of the fifth embodiment in conjunction with a food container;

5 **FIG. 19** is a side elevational view of **FIG. 18**.

FIG. 20 is a perspective view of the sixth embodiment of the condiment container;

FIG. 21 is an inverted perspective view of a sixth embodiment of the condiment container;

10 **FIG. 22** is a top plan view of the sixth embodiment;

FIG. 23 is a bottom plan view of the sixth embodiment;

FIG. 24 is a side elevational view of the sixth embodiment;

FIG. 25 is an end elevational view of the sixth embodiment;

15 **FIG. 26** is a cross-sectional view of the sixth embodiment showing opening and access to the spout for squeezing; and

FIG. 27 is a cross-sectional view of the sixth embodiment showing opening and access for dipping.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS:

20 **[0025]** Turning now to **FIG. 1** a first embodiment of the condiment container 20 according to this invention is adapted for marketing, and delivery to a consumer as an individual portion of a condiment. The condiment container 20 is formed by a container or cup portion 22 (see **FIG. 2**) and a lid or cover portion 24 (see **FIG. 1**) which are sealed together by an
25 adhesive along a flange 26.

[0026] The lid portion 24 is preferably fabricated from a material selected from the group consisting of polyethylene terephthalate (PET), amorphous polyethylene terephthalate (APET), oriented polyethylene terephthalate (OPET), polyester (PE), low density polyester (LDPE), linear low density
30 polyester (LLDPE), metallocene linear low density polyester (mLLDPE), high density polyester (HDPE), metallocene polyester (mPE), ethylene vinyl acetate (EVA), polypropylene (PP), high impact polystyrene (HIPS), foil,

ethylene vinyl alcohol (EVOH), polyamide, Nylon, polyvinyl chloride (PVC), and combinations thereof. Where foil is used, that foil may be an aluminum foil, or other metal foil. Typically, the thickness of the lid portion 24 will lie in the range of about 1 mil to about 5 mils. More preferably, the lid portion 24
5 may have a thickness in the range of about 1 mil to about 3 mils. The thickness of the lid portion 24 is selected to be more flexible than the cup portion, to have sufficient tensile integrity that the lid portion 24 can be pulled away from the cup portion overcoming the tackiness of the adhesive, and to have a surface texture that is graspable but not too slippery. The lid portion
10 24 preferably has a peripheral contour that substantially corresponds to the perimeter of the flange 26.

[0027] While the lid portion 24 may comprise a single layer of the selected material, the lid portion 24 may also be fabricated of multiple layers bonded, co-extruded or otherwise formed together into a cohesive structure, where
15 one or more of the layers is selected from the group of materials set forth above. Regardless of the particular composition used for the lid portion 24, all surfaces of the lid portion 24 which face the packaged condiment are required to be food-safe. If the condiment to be packaged experiences oxygen degradation over time, the lid portion 24 may include an oxygen
20 control layer or an oxygen scavenger layer in its structure. One suitable material for an oxygen control layer is EVOH which can function not only as an oxygen barrier but may also function as a moisture barrier. Depending on the condiment, the material from which the lid portion 24 is fabricated may be transparent, translucent, or opaque. Moreover the material may be
25 colored, if desired.

[0028] While the combinations of acceptable material combinations for the lid portion 24 is large, the following table identifies some combinations known to be useful for the lid stock.

TABLE 1 – Lid Stock Structures
PET / foil / LDPE-based sealant
PET / foil / EVA-based sealant
PET / LDPE-based sealant
OPET / PE / foil / LDPE / mLLDPE
OPET / PE / foil / PE / mLLDPE
Metalocene PE
EVA
PET / MET-PET / EVA-based sealant

[0029] The cup portion 22 (see **FIG. 2**) includes a receptacle 30 which extends away from the flange 26 and includes a generally planar bottom surface 32 which may be generally rectangular. In addition, the receptacle 30 includes a sidewall 36 extending between the bottom surface 32 and the flange 26. The flange 26 extends generally radially from the edge 40 (see **FIG. 2**) and defines a substantial area which is exposed until the lid portion 24 is applied. In addition, one side of the receptacle may include a generally triangular or generally trapezoidal surface 34 which is inclined relative to the generally planar flange 26 and the bottom surface 32. At one side of the receptacle 30 a spout 38 is provided. Preferably, the cup portion 22 is designed so as to be symmetrical about a longitudinal plane extending perpendicularly to the plane of **FIG. 5** and generally coincident with the line 9-9.

[0030] When the lid portion 24 is in place, that symmetry of the cup portion 22 coupled with the inclined surface 34 and the lid portion 24 creates a funnel or converging cross-sectional area at the side of the receptacle so that the funnel communicates with the spout 38. Thus, the spout 38 exhibits a cross-sectional area that is much smaller than the area exposed at the top edge of the receptacle 34 (see **FIG. 4**).

[0031] The cup portion 22 (see **FIG. 3**) is preferably fabricated from a material that is more rigid than the stock from which the lid portion is made. Thus, the bending stiffness of the cup portion 22 exceeds the bending

stiffness of the lid portion 24. That difference in stiffness makes the lid portion more readily deform for removal and opening of the assembled container. Although the cup portion 22 is stiffer than the lid portion 24, the cup portion 22 preferably is sufficiently pliable that it can be deflected by squeezing with hand pressure – i.e., pressure applied by fingers of an unaided human hand. Nevertheless, the cup portion 22 is sufficiently stiff that it does not deform or deflect in the absence of force. With those constraints and in the absence of the lid portion 24, the cup portion 22 can be supported by the bottom surface to provide a sufficiently rigid container to hold a condiment without spilling. In this connection, the generally planar flange 26 extending outwardly from the perimeter 40 of the receptacle also functions to stiffen the receptacle region of the cup portion 22.

[0032] In some applications, it may be desirable to have a bottom surface 32 (see **FIG. 4**) having increased stiffness. Such an increased stiffness may be accomplished by providing an embossed feature 44 in the bottom surface 32. Such an embossed feature 44 may also extend onto the inclined surface 34, if desired. In some applications, that embossed feature 44 may comprise a logo of the manufacturer. The enhanced stiffness results from the depth of the embossed feature 44 relative to the plane of the bottom surface 32.

[0033] In general, the material from which the cup portion 22 is fabricated may be selected from the same group of materials available for the lid portion 24, namely the group consisting of PET, APET, OPET, MET-PET, PE, LDPE, LLDPE, mLLDPE, HDPE, mPE, EVA, PP, mOPP, PS, HIPS, foil, EVOH, polyamide, Nylon, PVC, biaxially oriented materials, materials complying with 21 C.F.R. Part 177, and combinations thereof. Where foil is used, that foil may be an aluminum foil, or other metal foil. Typically, the thickness of the cup portion 22 will lie in the range of about 3 mils to about 20 mils. More preferably, the cup portion 22 may have a thickness in the range of about 8 mils to about 12 mils. The thickness of the cup portion 22 is selected to be less flexible than the lid portion 24 so that the lid portion 24

can be pulled away from the cup portion 22 overcoming the tackiness of the adhesive.

[0034] As with the lid portion 24, certain combinations of the materials for the cup portion 22 have been found to be particularly suitable, as set forth in the table below.

Table 2 – Suitable Cup Portion Material Combinations
PVC / adhesive layer / sealant film
APET / adhesive layer / sealant film
APET / sealant film
PP / adhesive layer / sealant film
HIPS
APET / EVOH
APET / PE / EVOH / PE
APET / HDPE / EVOH/ LDPE
APET / Nylon / APET
APET / Nylon / EVOH
PS / EVA / EVOH / EVA / sealant

[0035] The receptacle of the condiment container 20 is preferably sized to contain a suitable individual serving of the condiment, for example, a nominal volume of about one ounce. While larger and smaller nominal volumes are within the scope of this invention, the nominal volume will generally correspond to the quantity of the particular condiment desired by a typical individual. As seen in **FIG. 3**, the receptacle portion of the package has a nominal width corresponding to the maximum distance between the opposed sidewalls at the location of the edge 40 and extending transverse to the plane of symmetry between opposed sidewalls, a nominal length being the maximum length between sidewalls of the receptacle at the location of the edge 40 and measured along the plane of symmetry, and a nominal depth (see **FIG. 4**) also measured in the plane of symmetry but extending

from the bottom surface 32 to the flange 26. These nominal dimensions define the nominal volumetric capacity for the receptacle portion.

[0036] Another important feature of the cup portion 22 is lateral stability against tipping. Furthermore these nominal dimensions can be used to establish guidelines that provide adequate tipping stability. More specifically, the ratio of the nominal height to the nominal width is preferably less than about 0.5, and more preferably less than about 0.45. In addition, the ratio of the nominal height to the nominal length is preferably less than about 0.3, and more preferably less than about 0.26. When the receptacle of the cup portion 22 has nominal dimensions within these ranges, the receptacle is sufficiently stable that it does not tip when a food item is dipped in the condiment contained therein.

[0037] The lid portion 24 and the cup portion 22 are sealed together using a food-grade adhesive so as to define an encapsulated volume isolated from the environment. One technique for accomplishing the seal is to include a heat-sealable layer on the inside of the lid portion 24 and on the inside of the cup portion 22. Upon application of heat and pressure applied to the flange 26, the adjacent surfaces bond together forming the appropriate seal surrounding the periphery of the edge 40 of the receptacle. Alternatively, a suitable food-grade adhesive compatible with the materials of the container may be used. The adhesive is preferably applied so as to surround the edge 40 of the receptacle (see **FIG. 3**), but not so as to be contiguous therewith – i.e., some space exists between the adhesive and the edge 40. Moreover, the adhesive is applied so that it does not cover the spout 38. Preferably, the condiment container is capable of withstanding an applied force of at least about 50 lbs without bursting or breaking through the seal. More preferably, an applied force of about 70 lbs. will not burst the seal.

[0038] The adhesive preferably extends to the peripheral edge 50 of the flange 26, but provides a non-bonded region 52 at one side of the receptacle. That non-bonded region 52 extends inwardly along the flange 26 from the peripheral edge 50 of the flange by a distance sufficient that a pull-tab portion 54 (see **FIG. 5**) of the lid portion 24 not adhesively connected

to the flange 26 is sufficiently large to be graspable between fingers. A distance of about 0.5 inches or more is graspable for the pull-tab 54. It will be apparent to those skilled in the art that attempting to peel a lid portion away from the flange 26 (see **FIG. 3**) is difficult due to the width of the seal.

5 It has been found, however, that inclusion of a generally angular feature 56 aligned with the plane of symmetry and defining part of one edge of the non-bonded region 52 provides a peel-initiator that reduces the necessary force to peel the lid portion away from the flange 26. Inclusion of a peel-initiator at the edge of the non-bonded region materially enhances the ease with which
10 the lid portion can be removed from the container.

[0039] From the foregoing discussion, it will be apparent to those skilled in the art that the tab 54 can be grasped to pull the lid portion 24 away from the flange 26 of the cup portion 22 to expose the receptacle and its contents. Such a step would prepare the container for dipping a food item into the
15 condiment. However, a different opening scheme is also available with the container of this invention. More particularly, the container may be provided with a weakened region in the vicinity of the spout 38 for the purpose of opening the spout 38 as an alternative to removal of the lid portion 24. The weakened region may, for example, comprise a pair of aligned slits 60, 62 in
20 the vicinity of the spout 38. The slits 60, 62 are aligned with one another and straddle the spout 38. The slits 60, 62 may extend through the thickness of both the lid portion 24 and the cup portion 22. With this arrangement, the distal end of the container 20 can be bent to fracture the material of the container and expose a channel through the spout 38 into the
25 receptacle. At that point application of pressure to the receptacle will cause the condiment to be expelled through the spout 38 in directionally controlled and defined way.

[0040] The aligned slits 60, 62 can be applied to the container before, during, or after assembly of the condiment container 20. However, an
30 efficient mechanical way of creating the aligned slits 60, 62 is to form them at the same time that the lid portion 24 is applied to the cup portion 22 and adhesively connected thereto. Alternatively, a laser scoring process may be

employed to weaken the container around the spout 38 so that an end of the container can be snapped or twisted off to expose the end of the spout passage.

[0041] The materials selected for the lid portion 24, the cup portion 22, and the adhesive are preferably chosen so that the condiment has a desired shelf life. In the case of a condiment such as ketchup, a shelf-life of at least six months is desirable. With condiments like ketchup, shelf-life can be evaluated by changes in the color characteristics of the condiment. Testing for shelf-life can, therefore, be conducted using colorimetric analyses. The Hunter *Lab* color space and the $L^*a^*b^*$ color space use three coordinates to define any particular color. For example, in the $L^*a^*b^*$ color space, the coordinates L^* , a^* , and b^* define the three-dimensional color space. The L^* component measures lightness and correlates particularly well with human eye perceptions. The L^* value ranges between 0 corresponding to pure black and 100 corresponding to pure white. The a^* coordinate measures the color position between red/magenta and green, with negative values indicating green and positive values indicating magenta. The b^* component measures the color position between yellow and blue, with negative values indicating blue, while positive values indicate yellow. Accordingly, changes in ketchup color over time can be evaluated by the value of and changes in the value of the L^* , a^* , and b^* , or L , a , b components. For purposes of shelf-life analysis, it has been found that the lightness component, L^* or L , provides a reliable parameter to correlate with shelf-life. More particularly, as long as the L^* component value remains within about 10% of its initial value, during the shelf-life, the shelf-life requirement is satisfied. In addition, the ratio of a^*/b^* or a/b is also indicative of product degradation. Thus, in some instances, satisfactory shelf-life may be determined when the L^* (or L) component and the a^*/b^* (or a/b) ratio remain within about 10% of their initial values, respectively. Other condiments for which color changes over time can also be colorimetrically evaluated for shelf-life using one or more of the $L^*a^*b^*$ color space components.

[0042] An alternative embodiment of the invention is shown in **FIG. 7**. In this arrangement, the peel initiator 56' and the adjacent seal portion are constructed such that the peel-initiator blends to a seal presenting a gradually increasing resistance, as opposed to the step-wise increasing resistance of the first embodiment. This arrangement is characterized by the angularly converging portions of the seal that terminates with the peel-initiator 56'.

[0043] Yet another embodiment of the invention includes a pair of peel-initiator structures in the adhesive bonding between the lid portion 24 and the cup portion (see **FIG. 8**). In this arrangement, a peel initiator 64, 66 is provided at corresponding corners of the adhesive seal. With this arrangement, the lid portion 24 may be peeled away from either corner with a corresponding reduction in the force needed to initiate the peel-away.

[0044] To assemble the condiment container 20, the cup portion 22 may be exposed to a dispensing mechanism that deposits a metered volume of condiment 70 (see **FIG. 9**) in the receptacle. The metered volume supplied is less than the actual volume of the receptacle so that some head space exists above the condiment. After the adhesive is applied to the flange 26, the lid portion 24 is positioned in overlying relationship to the cup portion 22 and sealed thereto. The resulting structure includes an adhesive 72 bonding the lid portion 24 and the cup portion 22 (see **FIG. 10**).

[0045] In another embodiment of the condiment container 20 (see **FIG. 7**), the non-bonded region 54 may be enlarged insofar as its width in the direction of the plane of symmetry is concerned. Other than the peel-initiator 56' and associated structure, the condiment container 20 of this embodiment has the same features and characteristics as the embodiment described above in connection with **FIGs. 1-6**. Accordingly, those common features will not be repeated here. The peel-initiator 56' of this second embodiment extends farther into the region 54 than in the first embodiment while the adhesive seal 70 has a substantially uniform width around the edge of the receptacle. Here, the peel-initiator 56' is shaped substantially as a chevron, caret, or curly bracket. Moreover, the peel-initiator 56' is positioned in

general longitudinal alignment with the spout 38 but is located on the opposite side of the receptacle from the spout 38. With such an arrangement, the alternative structures for opening the package are separated from one another so that the user or consumer makes a
5 conscious decision as to whether to open the condiment container by breaking or tearing open the spout 38 for a squeeze application, or to peel back the lid portion 24 so that the container 20 can be used for a dipping application.

[0046] In a further embodiment (see **FIG. 8**), the condiment container 20
10 has a different position and arrangement for the peel-initiator but is otherwise fully described by the discussion above in connection with **FIGs. 1-6**, which discussion will not be repeated here. In this further embodiment, a pair of peel-initiators 64, 66 are provided, and each peel-initiator 64, 66 is positioned at a corresponding corner of adhesive seal 70 generally aligned
15 with a corner of the receptacle. Recognizing that some consumers may find it easier, or more intuitive to start peeling back the lid portion 24 from a corner, the corner location of the peel initiators 64, 66 facilitates the peel opening. As shown, the peel-initiators 64, 66 are symmetric with respect to the plane of symmetry for the condiment container so that either corner may
20 be randomly chosen by the consumer or user to start the peel opening process.

[0047] It is also within the purview of this disclosure that only one peel-initiator be used and that that peel-initiator be located at a corner of the condiment container offset from the plane of symmetry. Such a container
25 may look like the embodiment of **FIG. 8** but with only one of the peel-initiators 64, 66 being present. It is likely that with such an embodiment directions might be provided on the outside surface of the lid portion 24 focusing consumer attention on the appropriate corner for peel initiation. Alternatively, the cup portion 22 and the lid portion 24 could be trimmed
30 more closely to the adhesive line at one corner, leaving a tab projecting from the other corner and the peel-initiator so that peel-type opening would necessarily occur at the peel-initiator, whether it is centrally positioned or

arranged at that other corner of the container. Here again, the features of such a condiment container are adequately described above in connection with **FIGs. 1-6** and will not be repeated here.

[0048] To use the condiment container 20, (see **FIG. 11**), the consumer initially decides whether to have controlled dispensing of the condiment or to have full access to the receptacle. Where controlled dispensing is desired, the end of the container is broken off or twisted off at the location of the weakened area to expose the end of the spout 38. By applying finger pressure to the receptacle area, condiment is squeezed out of the spout so that it can be applied selectively, directionally, and in a controlled manner to a food item. Where fuller access to the condiment is desired (see **FIG. 12**), the tab 54 may be pulled away from the flange, past the peel-initiator, and away from the upper edge of the receptacle to expose as much (or all) of the receptacle as may be desired.

[0049] Yet another embodiment of the condiment container 20 (see **FIG. 13**) has a different position for the peel-initiator 84. The features of this condiment container not specifically described are adequately described in connection with **FIGs. 1-6** and will not be repeated here. In this arrangement, the peel initiator 84 is aligned with the spout 38 and positioned so that the spout 38 is between the peel initiator 84 and the receptacle of the cup portion 22 (see **FIG. 14**). Here, the flange 26 of the cup portion 22 includes a tongue 80, which may be generally rectangular, symmetrically disposed with respect to the spout 38 and extending beyond the spout. The peel-initiator 84 may have a generally angular or generally pointed feature oriented outwardly away from the spout 38 and the receptacle, but in general alignment therewith. Preferably, the tongue 80 extends beyond the peel-initiator 84 by a distance of 0.5 inches or more. The lid portion 24 (see **FIG. 13**) also includes a tongue 82 adapted, sized, and arranged to overlie and conform to the tongue 80 of the cup portion.

[0050] To open the condiment container 20, the tongue 86 of the lid portion 22 (see **FIG. 14**) is grasped and peeled away from the tongue 80 of the cup portion 22, for example in the direction of arrow 86. After the

separation begins at the peel-initiator 84, the tongue 82 of the lid portion 22 exposes the end of the spout 38. At this point, the condiment container 20 may be squeezed by the user so that condiment is expressed through spout 38 in a controlled and readily directed manner. Rather than stopping when
5 the spout is exposed, the lid portion 24 may be peeled farther away from the tongue 80 of the cup portion 22 to expose a portion or all of the receptacle and the condiment 70 therein. Thus, the container 20 can provide a dipping container for a food item. It will be apparent to those skilled in the art that it is not required that the lid portion either open the spout or open the
10 receptacle. If desired, the consumer may first open the spout and dispense some of the condiment therethrough, and later open the lid portion to expose the receptacle to use some of the condiment by dipping. Moreover, if desired, the lid portion may be partially opened or completely removed.

[0051] Another embodiment of the condiment container 20 (see **FIG. 16**)
15 may have the spout 38 located at one end with the graspable tongue extending in a generally triangular configuration beyond the spout 38. The features of this condiment container not specifically described are adequately described in connection with **FIGs. 1-6** and will not be repeated here. This embodiment also includes a generally pentagonal receptacle 90,
20 but with sides meeting at obtuse angles. One end of the container has a generally straight edge 91 extending generally perpendicularly to the plane of symmetry for the container 20, and having a length corresponding to the maximum width of the container 20. The container also includes side edges 93, 95 extending from corresponding ends of the straight edge 91 to
25 corresponding corners of the container. A pair of symmetrically disposed slits 92, 94 extend from the corresponding side edge 93, 95 toward the straight edge 91, but do not intersect that straight edge 91. The slits 92, 94 may be straight or arcuate, as desired, but the blind end of each slit 92, 94 is spaced from the straight edge 91 as well as from both side edges 93, 95.
30 With that arrangement, the slits 92, 94, and the side edges 93, 95 cooperate to define a pair of symmetrically disposed ears 96, 98. At the time of manufacture, the ears 96, 98 lie in the plane of the flange 26 (see **FIG. 17**).

[0052] In use, the condiment container 20 of this embodiment provides an additional convenience feature (see **FIG. 18**). The ears 96, 98 may be pushed out of the plane of the flange 26 so that an upper edge of a package 100 can be received between the ears 96, 98 and the flange 26. In this fashion, the condiment package 20 can be dispensed with the package 100 where appropriate. The condiment container 20 can be configured for opening as described above in any of the other embodiments. Moreover, when opened for dipping use (see **FIG. 19**), the cooperation between the ears 96, 98 and the side of the package 100 will support the condiment container 20 in cantilevered position so that the condiment is readily accessible.

[0053] If desired, the surface of each ear 96, 98 may be treated to enhance frictional engagement with a package 100. For example, the surface of the ears 96, 98 could be roughened relative to other surfaces of the container 20, or may have a low tack adhesive applied to at least a portion thereof.

[0054] The shape of the receptacle in the cup portion may be generally pentagonal as depicted in the embodiments described above, but may also have other desired shapes. For example, generally rectangular, generally square, generally triangular, generally polygonal, oblong, generally elliptical, and other shapes for the receptacle are all within the scope of this disclosure. For example, another embodiment of the condiment container 20 may include a generally cylindrical receptacle 110 (see Fig. 4A). The features of this condiment container not specifically described are adequately described in connection with **FIGs. 1-6** and will not be repeated here. As seen from the various embodiments shown and described in this disclosure, the flange 26 surrounding the receptacle may follow the shape of the upper edge of the receptacle, or may have a larger area. In **FIG. 21**, for example, the flange 26 is generally rectangular thereby providing multiple locations from which the lid portion can be peeled back, some of which access the spout and some of which access the receptacle.

[0055] To make a container in accordance with this disclosure, the material for the cup portion is typically provided in a roll. That roll of material is unwound into a forming device as a substantially continuous sheet where a plurality of receptacles are formed. Typically, the receptacles may be
5 formed in a row having two to about twelve or more receptacles therein, thereby forming a sheet with receptacles in straight transverse rows and straight longitudinally extending rows running in the direction of the length of the sheet unwound from the roll.

[0056] The sheet with formed receptacles then advances to filling
10 apparatus. In that filling apparatus, the desired condiment is deposited in the receptacles through a conventional metering device to control the quantity and volume of condiment for each receptacle. Ordinarily, there is a filling head for each longitudinal row of receptacles in the sheet. Moreover, these filling heads may supply the same condiment in each of the
15 longitudinal rows. However, if desired, it is within the scope of this disclosure that adjacent fill heads may deliver different condiments so that different condiments are filled in the receptacles of adjacent longitudinal rows of the sheet.

[0057] Next, the sheet with filled receptacles is flushed with gas
20 compatible with the product and helpful in retarding product degradation. At this point a second sheet of material for the lid portion is unrolled and advanced into overlying relationship with the receptacle sheet where it is sealed into position with respect to each of the receptacles.

[0058] The filled, covered, receptacles in the substantially continuous
25 sheet then advance to a die cutting machine where individual containers are cut from the continuous sheet. Conventional accumulation, packaging, palletizing, storing, and shipping of the individual containers then occurs.

[0059] The word "about" is used in connection with numerical values at various locations throughout this specification with the intent of avoiding
30 mathematical precision for those numerical values. Accordingly, when the word "about" is used in connection with a numerical value or range of values, it is intended that the word "about" should be interpreted as including a

tolerance of $\pm 10\%$ around the stated numerical value. To similar effect, the words "generally" and "substantially" are used throughout this specification in connection with various geometric words, terms, and/or phrases. The intent of the words "generally" and "substantially" in such a context is to avoid strict
5 geometrical definitions, to encompass structures which approximate the geometrical definitions, and to include features that are not precisely met by the related terms and/or phrases.

[0060] Moreover, it is expressly intended that this invention be interpreted so as to be consistent with all parts of this specification. Thus, the summary,
10 abstract, drawing description, and the like are not intended to be limiting but are intended to summarize some, but not all, features, or to provide an overview of the entire specification, or of a particular drawing.

[0061] It will now be apparent to those skilled in the art that this specification describes a new, useful, and nonobvious condiment container.
15 Moreover, it will be apparent to those skilled in the art that numerous modifications, variations, substitutions, and equivalents exist for the various features of the invention described in the appended claims. Accordingly, it is expressly intended that all such modifications, variations, substitutions, and equivalents which fall within the spirit and scope of the invention, as defined
20 in the appended claims, be embraced thereby.

WHAT IS CLAIMED IS:

1. A container comprising:
a container portion fashioned from a container material having a first bending stiffness,
5 defining a receptacle having a nominal volume and a spout, having a generally planar bottom with a nominal width, having a generally planar flange generally parallel to the planar bottom, spaced therefrom, and surrounding the receptacle;
a cover portion fashioned from a cover material having a second
10 bending stiffness which is less than the first bending stiffness, the cover portion substantially covering the generally planar flange;
adhesive between the container portion and the cover portion in the region of the generally planar flange, such that a non-bonded region exists in alignment with the spout;
15 a weakened region in general transverse alignment with the spout;
and
a peel initiator at the non-bonded region.
2. The container of Claim 1, further including an embossed
20 portion in the generally planar bottom operable to increase the bending stiffness of that generally planar bottom.
3. The container of Claim 1, including an embossed portion in the
generally planar bottom.
25
4. The container of Claim 1, wherein the container portion and the cover portion include a generally symmetrical pair of cuts extending from sides of the container toward a container end so as to define a pair of ears.
- 30 5. The container of Claim 4, wherein the ears include a surface adhering treatment.

6. The container of Claim 1, wherein the container portion is fabricated from material having an oxygen control barrier.

7. The container of Claim 1, wherein the cover portion is
5 fabricated from a material having an oxygen control barrier.

8. The container of Claim 1, wherein the peel initiator is located in longitudinal alignment with the spout portion.

9. The container of Claim 1, wherein the peel initiator is located
10 opposite from the spout portion.

10. The container of Claim 1, wherein the weakened region includes a pair of aligned cuts, positioned on corresponding sides of the
15 spout.

11. The container of Claim 10, wherein the weakened region is applied mechanically.

12. The container of Claim 1, wherein the weakened region
20 comprises a laser score.

13. The container of Claim 1, wherein the adhesive provides a resistance to peeling in the range of about 2 to about 10 pounds force.
25

14. The container of Claim 1, wherein the receptacle has a width, a depth, and a length, and is proportioned such that the depth is less than about 50% of the width, and the depth is less than about 35% of the length.

15. The container of Claim 1, wherein the container can support an
30 applied weight of about 50 lbs.

16. The container of Claim 1, wherein the receptacle contains a
condiment.

17. The container of Claim 1, wherein the receptacle contains a
5 condiment selected from the group consisting of ketchup, mayonnaise, and
sauce.

18. The container of Claim 17, wherein the receptacle contains
ketchup.

10

19. The container of Claim 18, wherein the first material and
second material are selected such that the condiment has a shelf-life of at
least about six months.

15 20. The container of Claim 19, wherein shelf-life is determined
using a colorimeter operating in the $L^*a^*b^*$ color space, and the L^* -value
does not degrade more than about 10% during a six-month period.

21. The container of Claim 1, wherein the cover portion includes a
20 foil layer.

22. The container of Claim 1, wherein the cover portion and the
container portion are opaque.

23. The container of Claim 1, where in the material of the cover
25 portion is selected from the group consisting of PET, APET, OPET, MET-
PET, PE, LDPE, LLDPE, mLLDPE, HDPE, mPE, EVA, PP, mOPP, PS,
HIPS, foil, EVOH, polyamide, Nylon, PVC, biaxially oriented materials,
materials complying with 21 C.F.R. Part 177, and combinations thereof.

30

24. The container of Claim 22, wherein the cover portion includes
at least two layers, at least one layer selected from the group consisting of

PET, APET, OPET, MET-PET, PE, LDPE, LLDPE, mLLDPE, HDPE, mPE, EVA, PP, mOPP, PS, HIPS, foil, EVOH, polyamide, Nylon, PVC, biaxially oriented materials, materials complying with 21 C.F.R. Part 177, and combinations thereof.

5

25. The container of Claim 1, wherein the thickness of the cover portion lies in the range of about 1 mil to about 5 mils.

26. The container of Claim 1, where in the material of the container
10 portion is selected from the group consisting of PET, APET, OPET, MET-PET, PE, LDPE, LLDPE, mLLDPE, HDPE, mPE, EVA, PP, mOPP, PS, HIPS, foil, EVOH, polyamide, Nylon, PVC, biaxially oriented materials, materials complying with 21 C.F.R. Part 177, and combinations thereof.

15 27. The container of Claim 25, wherein the container portion includes at least two layers, at least one layer selected from the group consisting of PET, APET, OPET, MET-PET, PE, LDPE, LLDPE, mLLDPE, HDPE, mPE, EVA, PP, mOPP, PS, HIPS, foil, EVOH, polyamide, Nylon, PVC, biaxially oriented materials, materials complying with 21 C.F.R. Part
20 177, and combinations thereof.

28. The container of Claim 1, wherein the thickness of the container portion lies in the range of about 3 mils to about 20 mils.

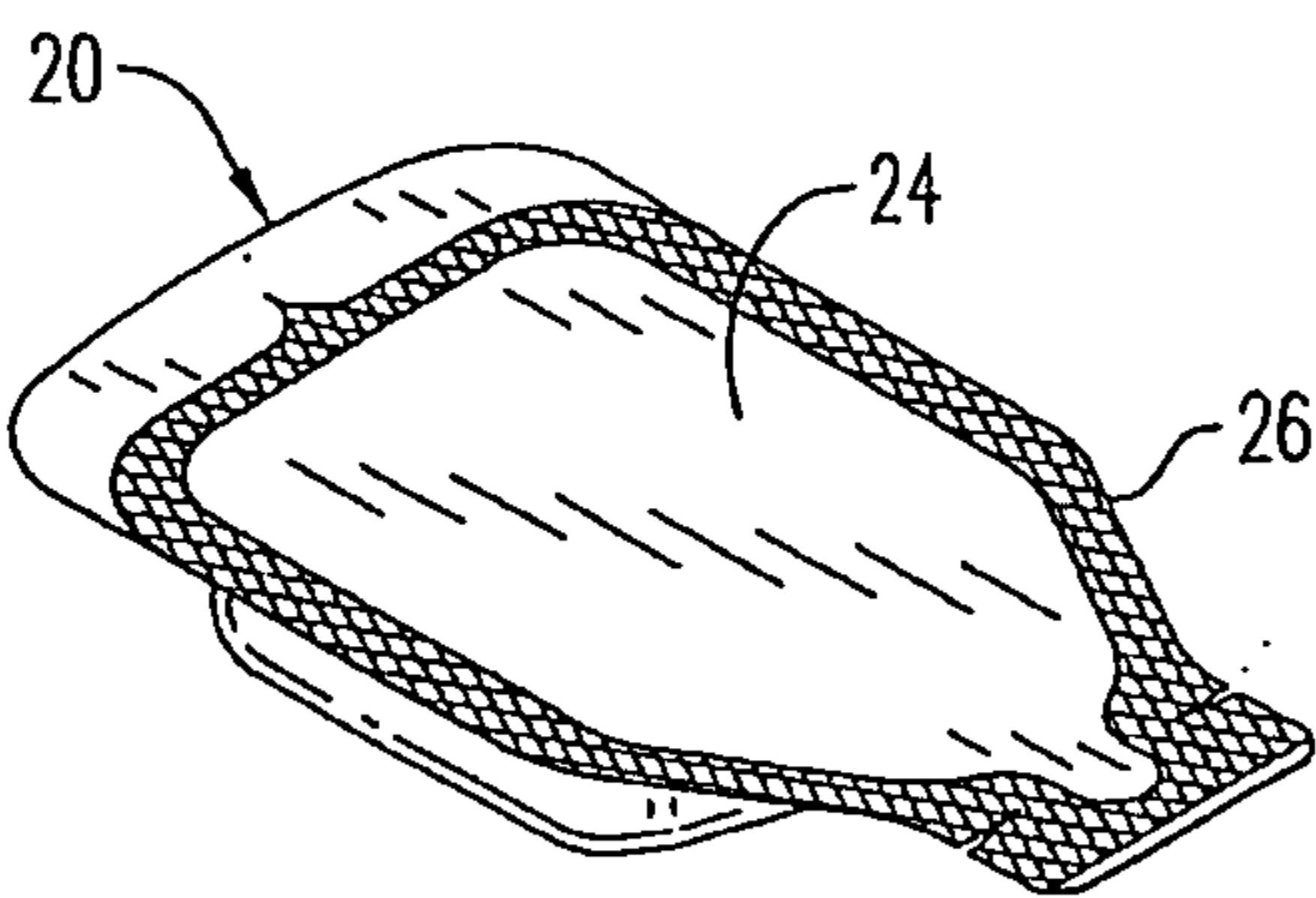


FIG. 1

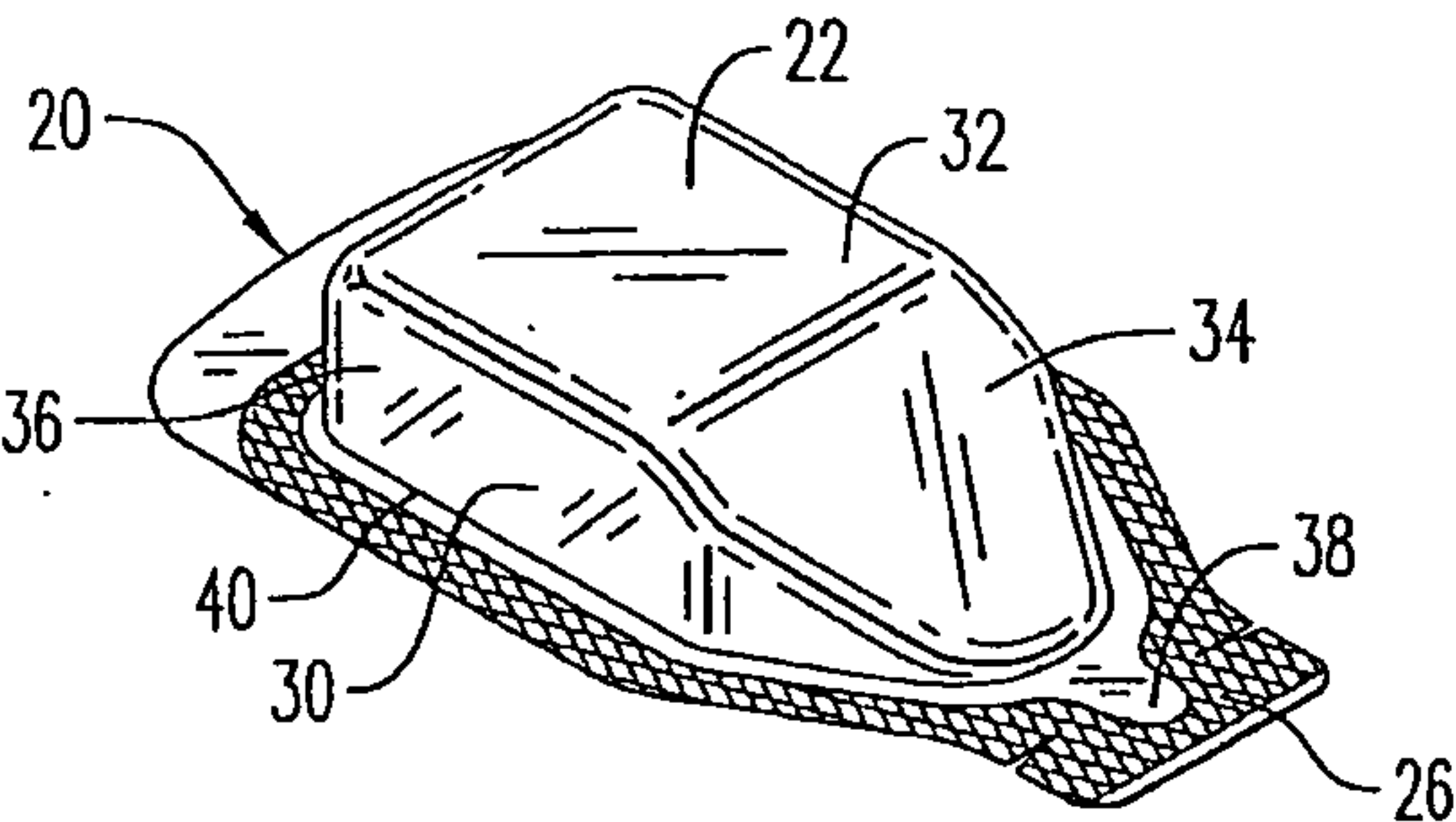


FIG. 2

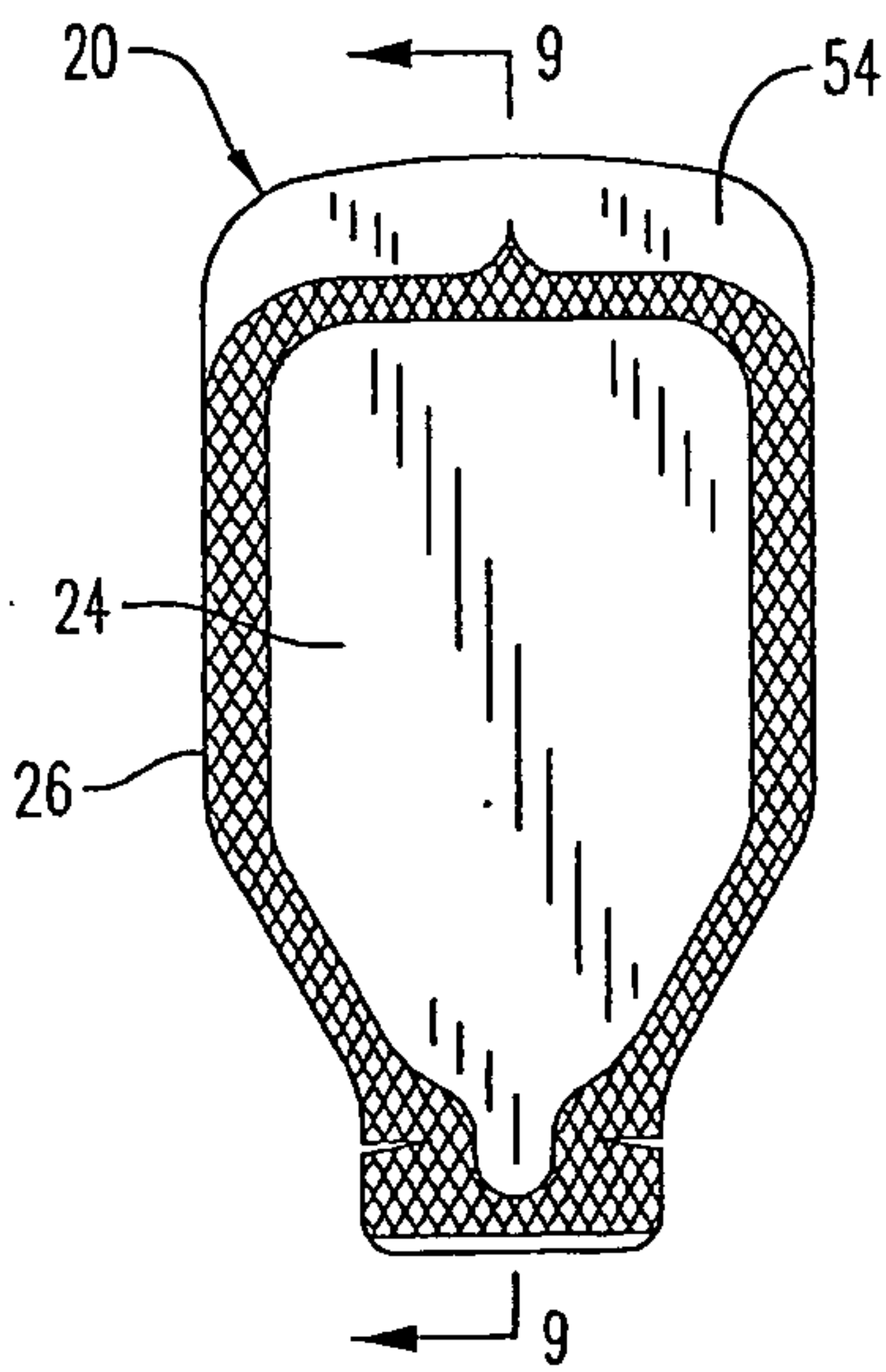


FIG. 3

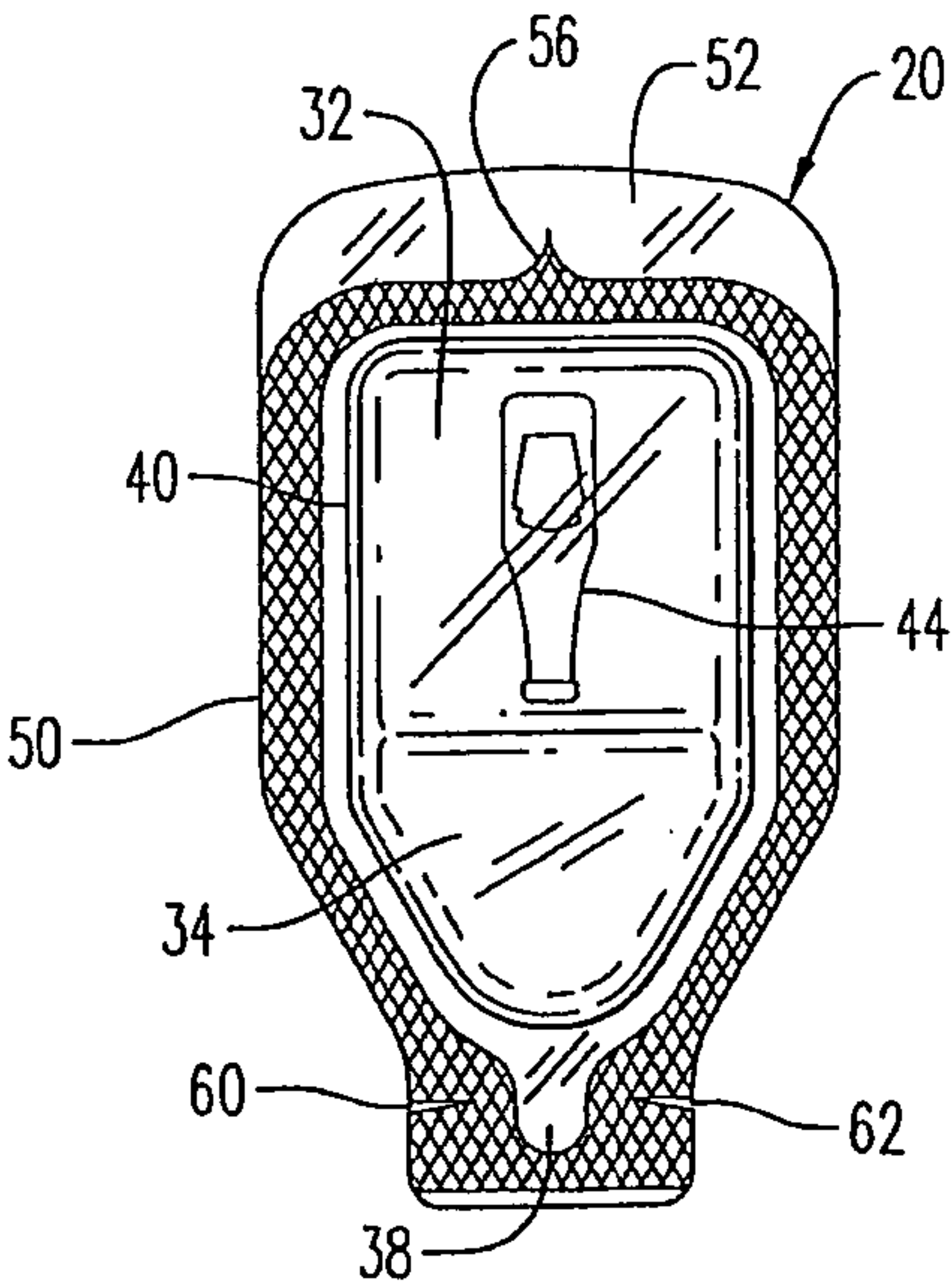


FIG. 4

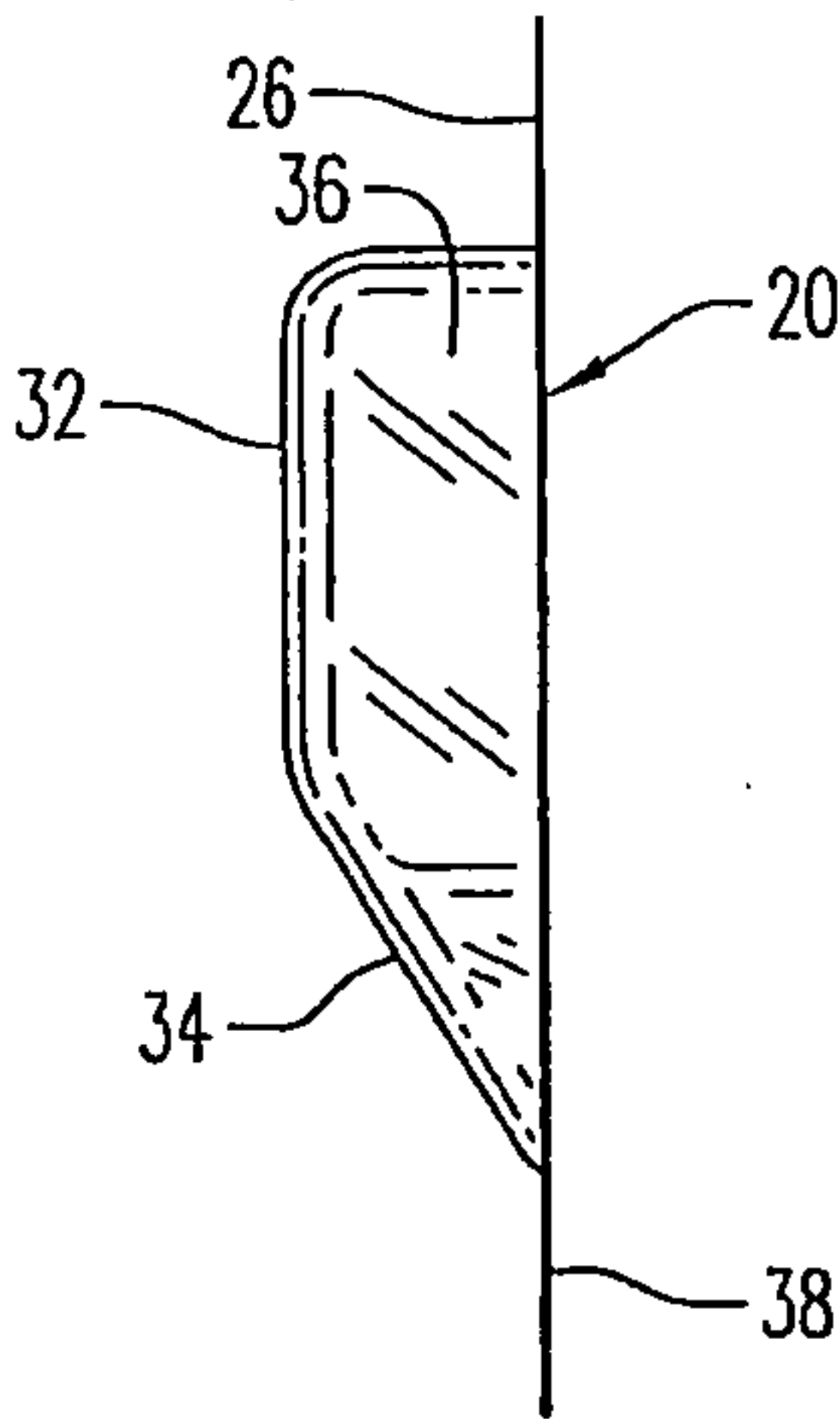


FIG. 5

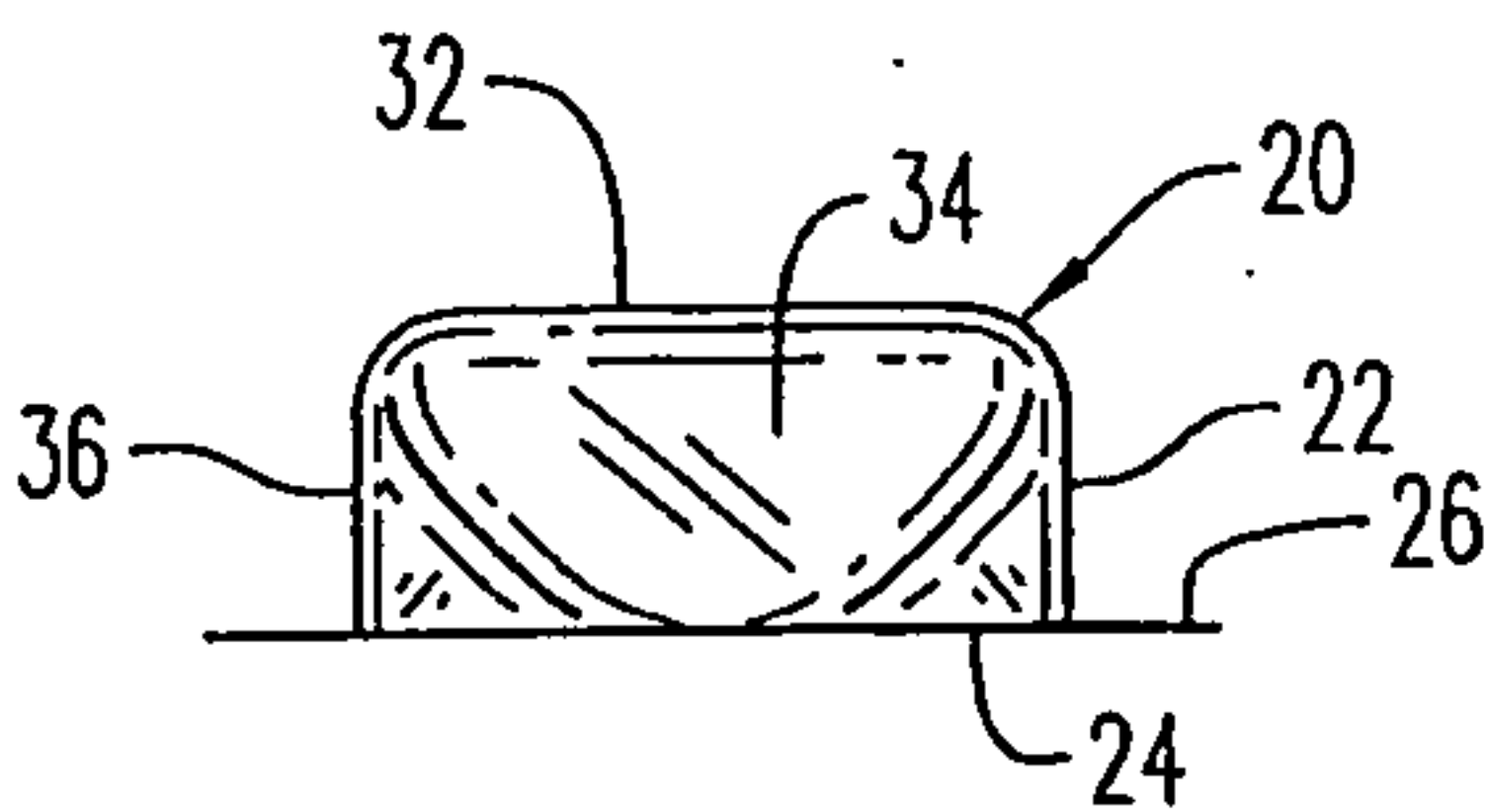
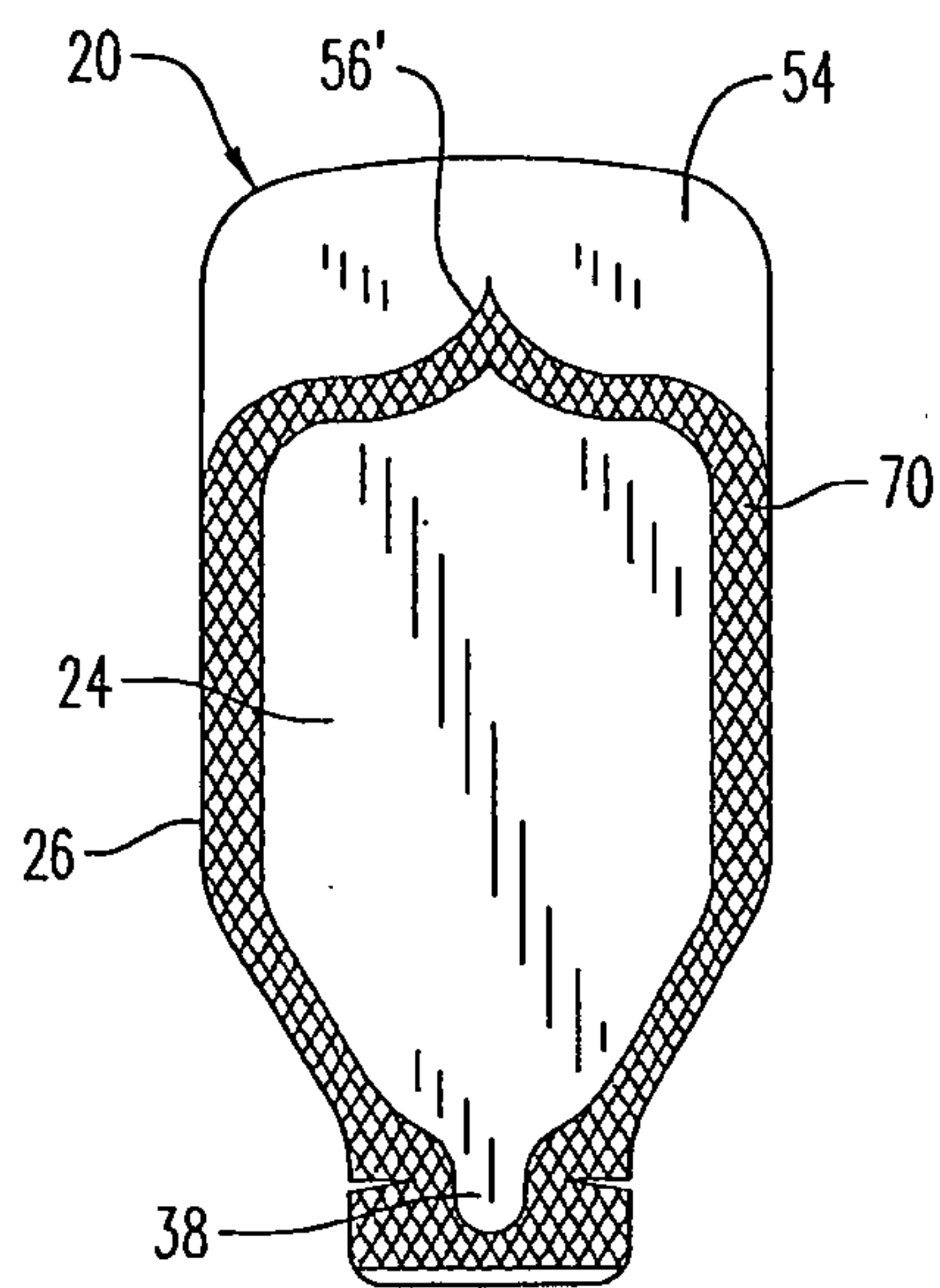
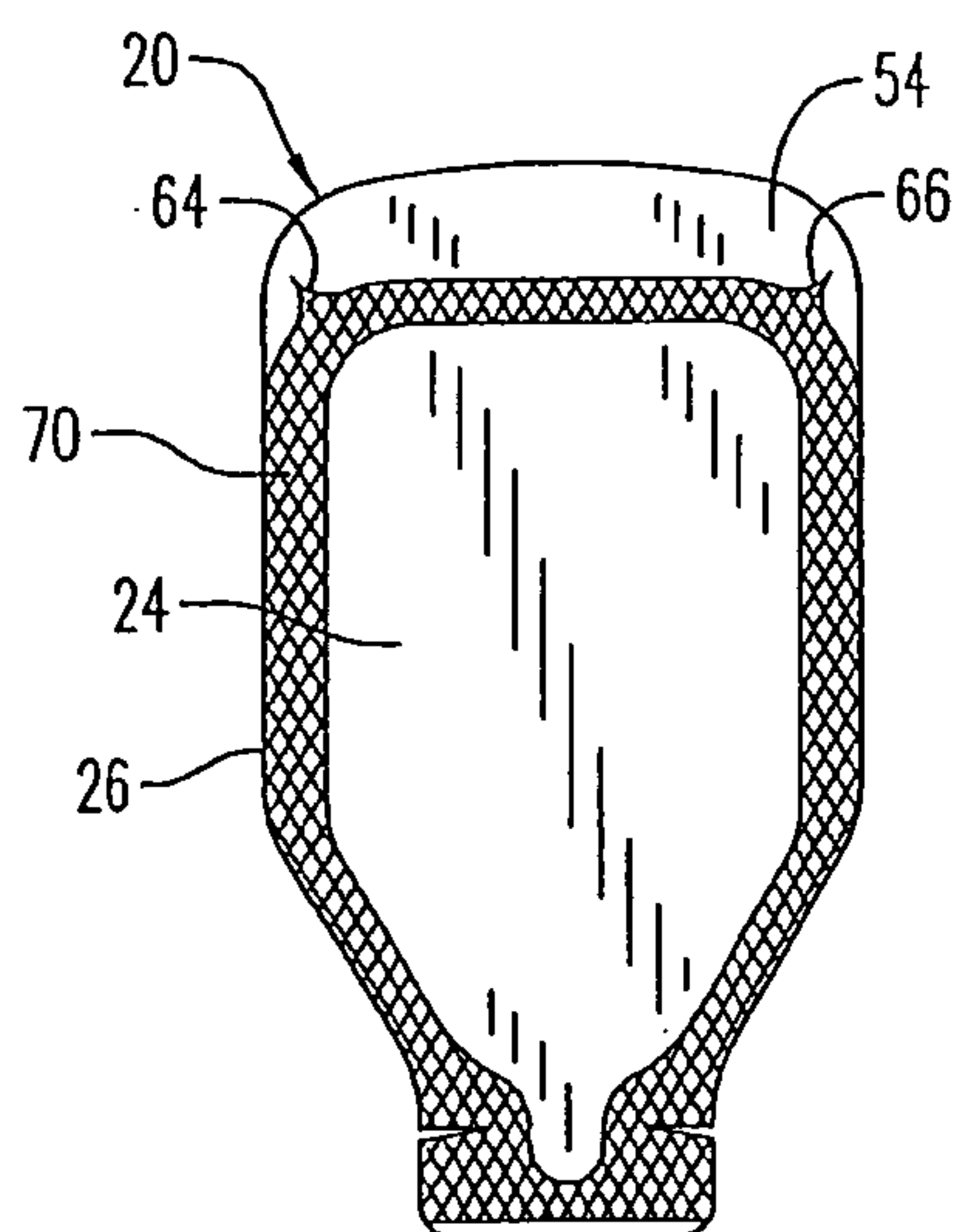


FIG. 6

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**FIG. 7****FIG. 8**

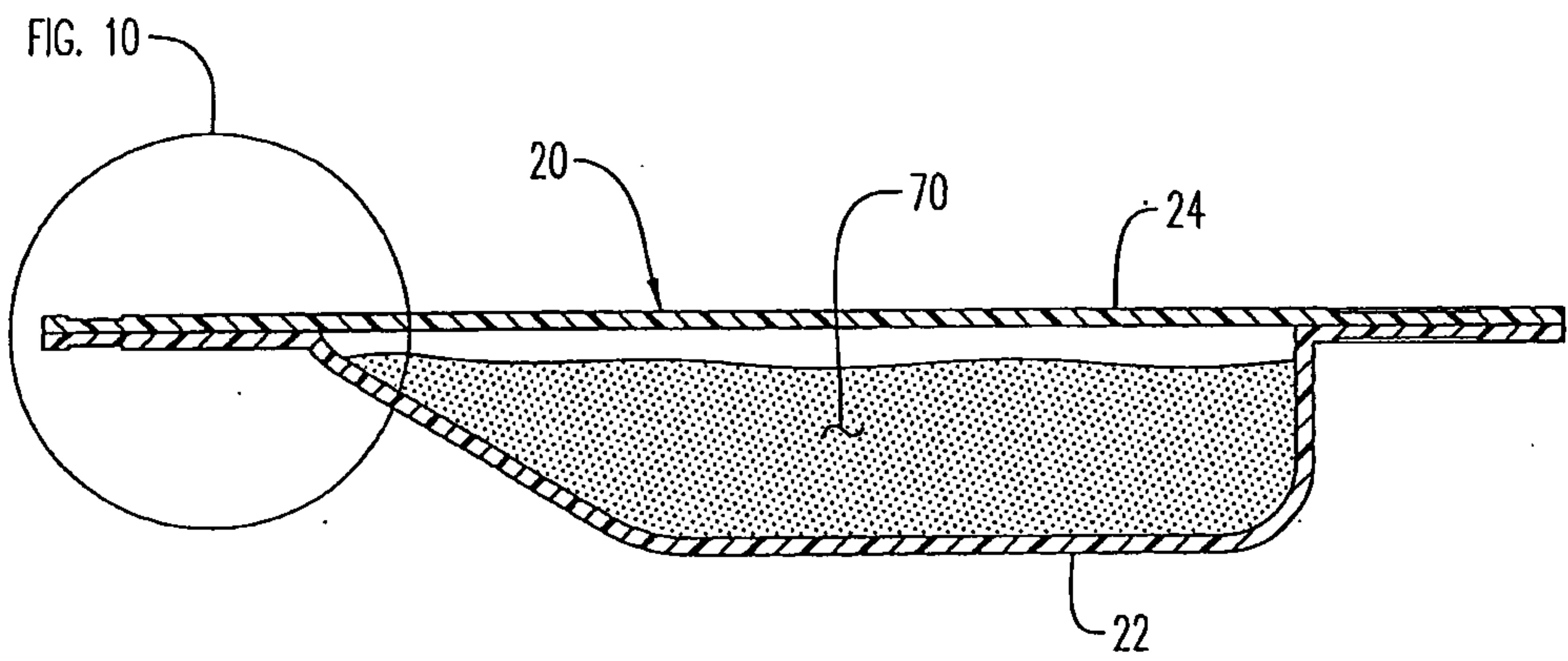


FIG. 9

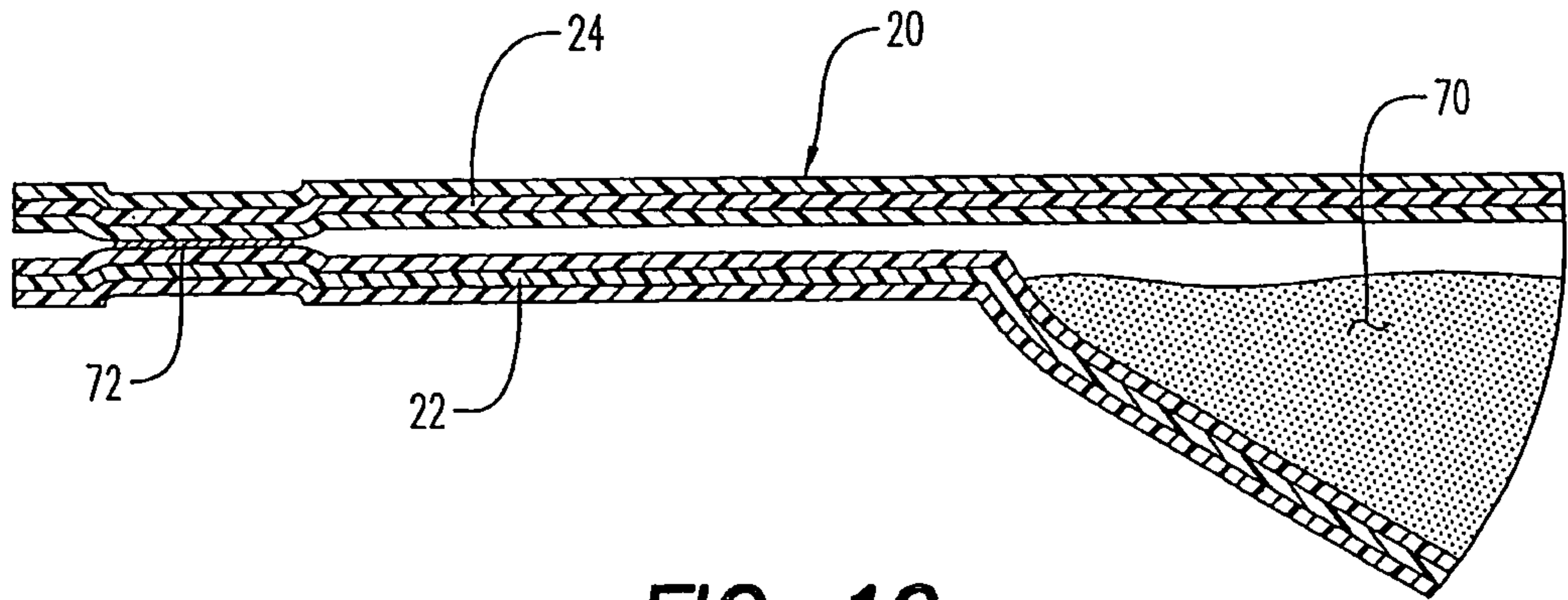


FIG. 10

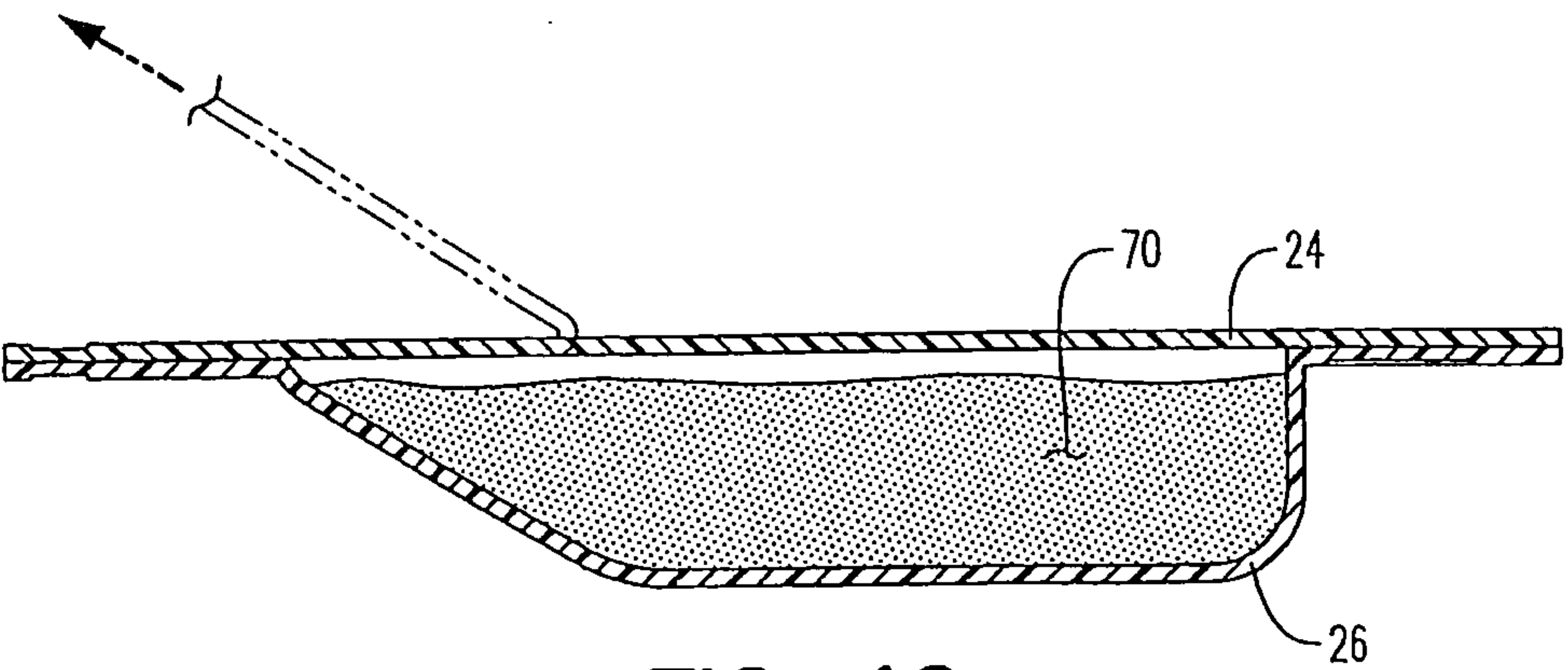
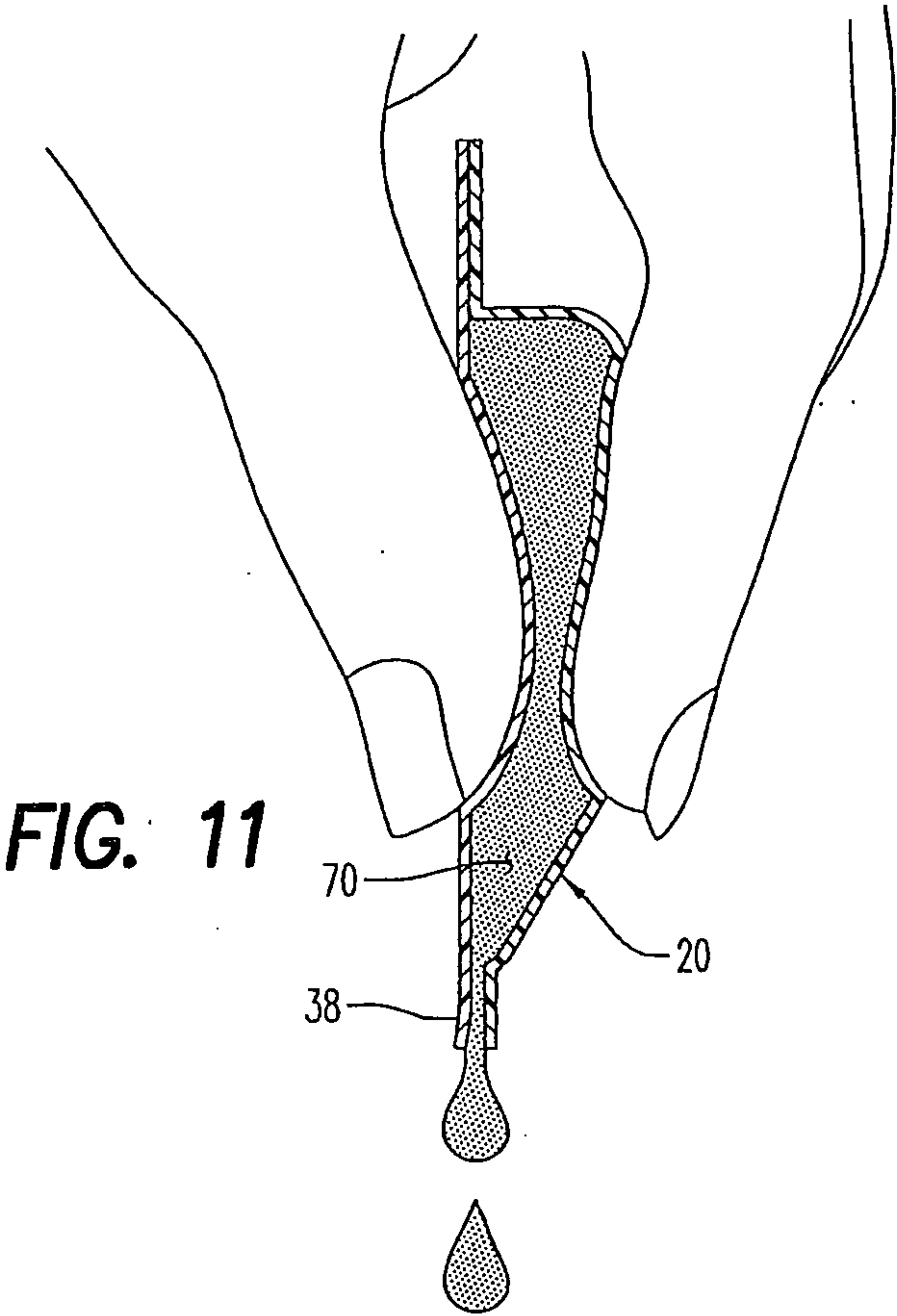


FIG. 12

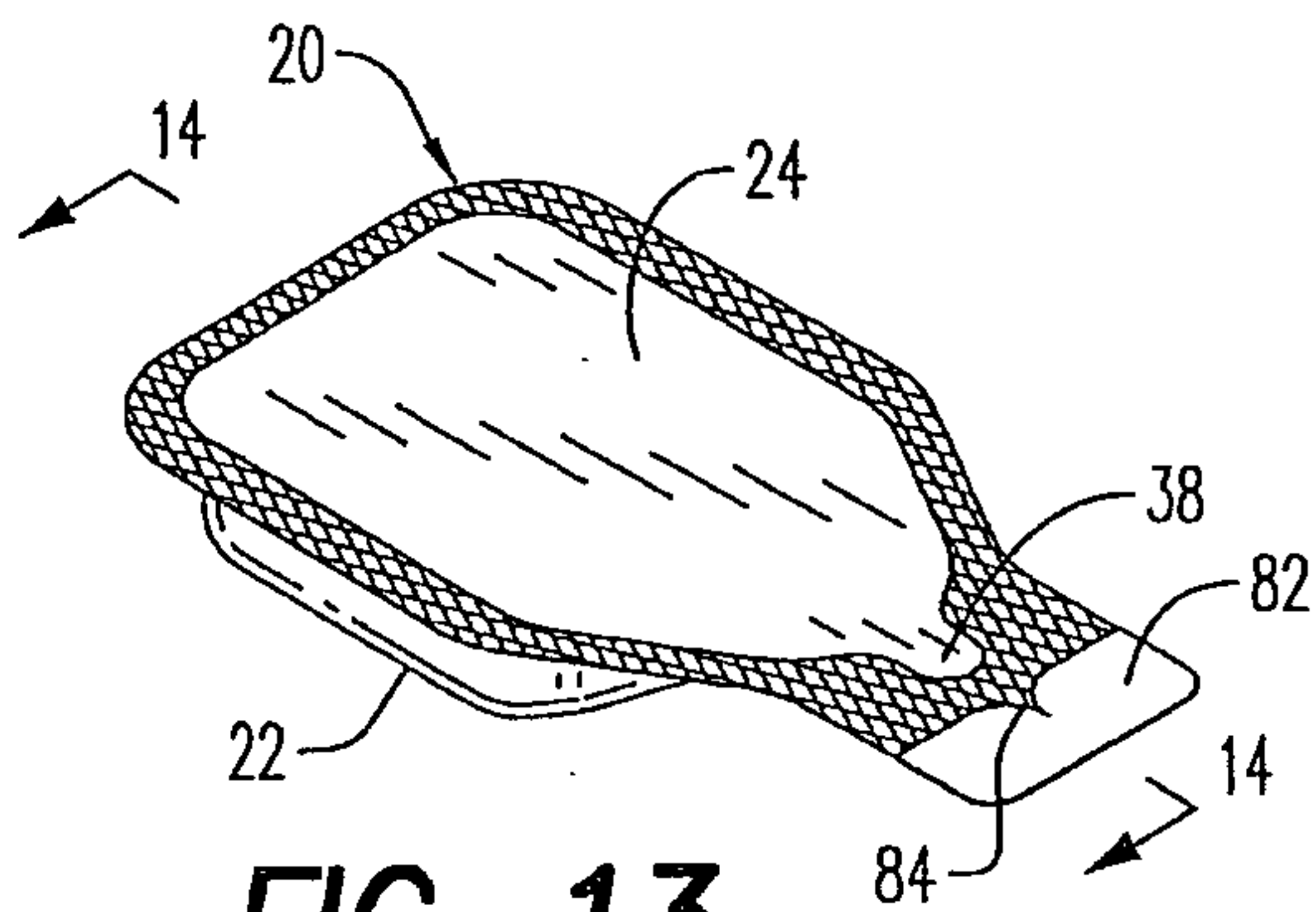


FIG. 13

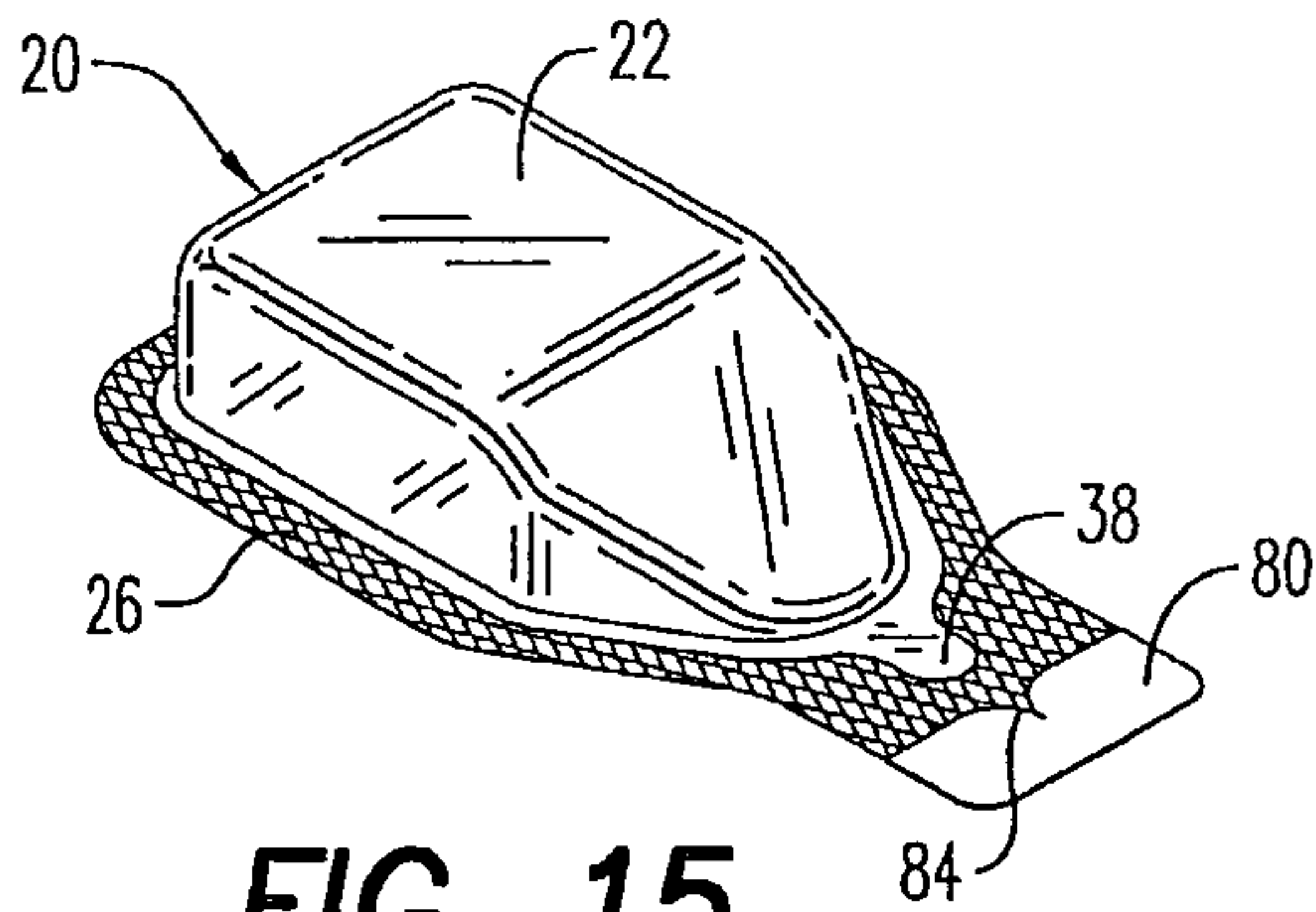


FIG. 15

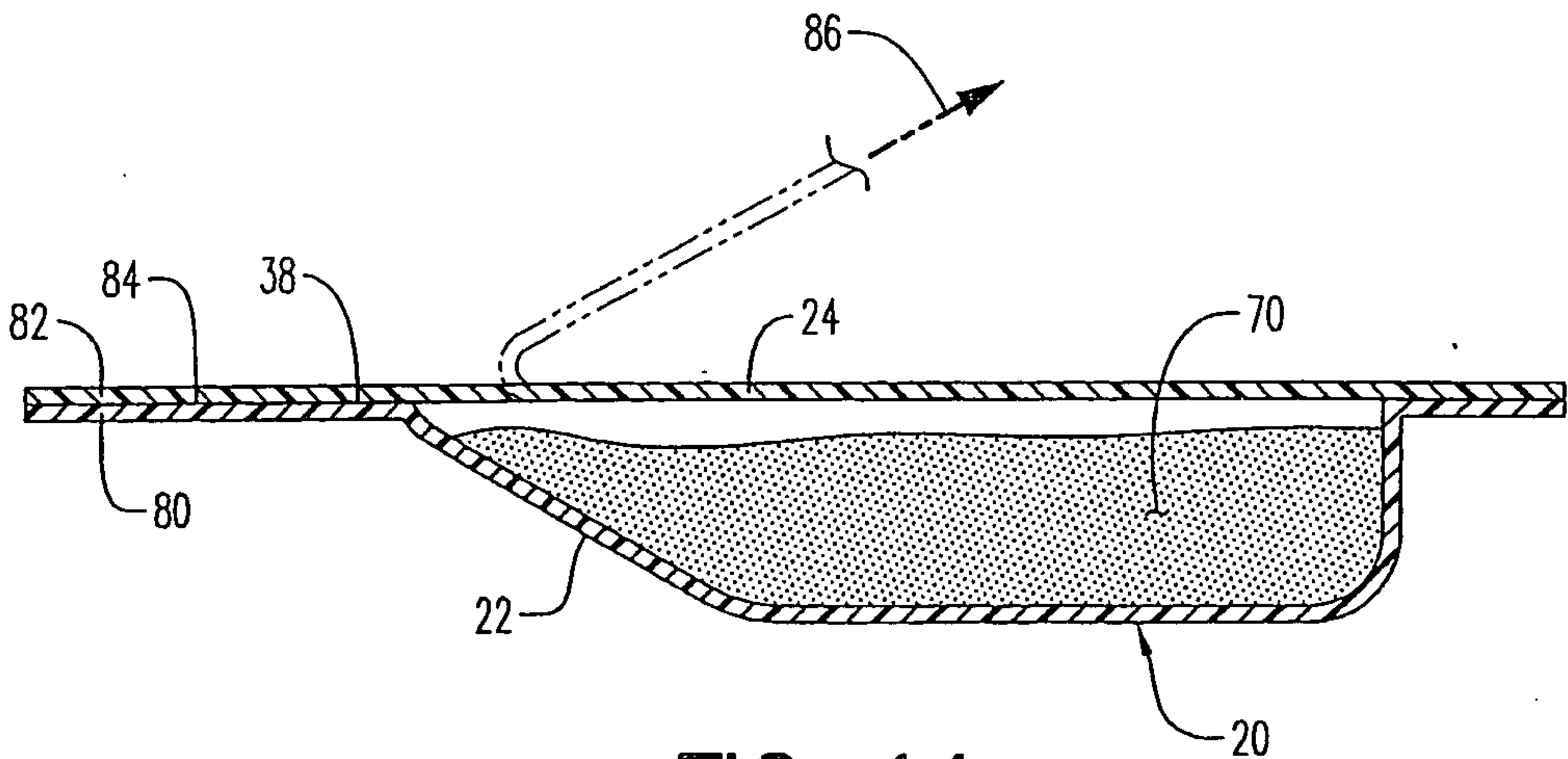


FIG. 14

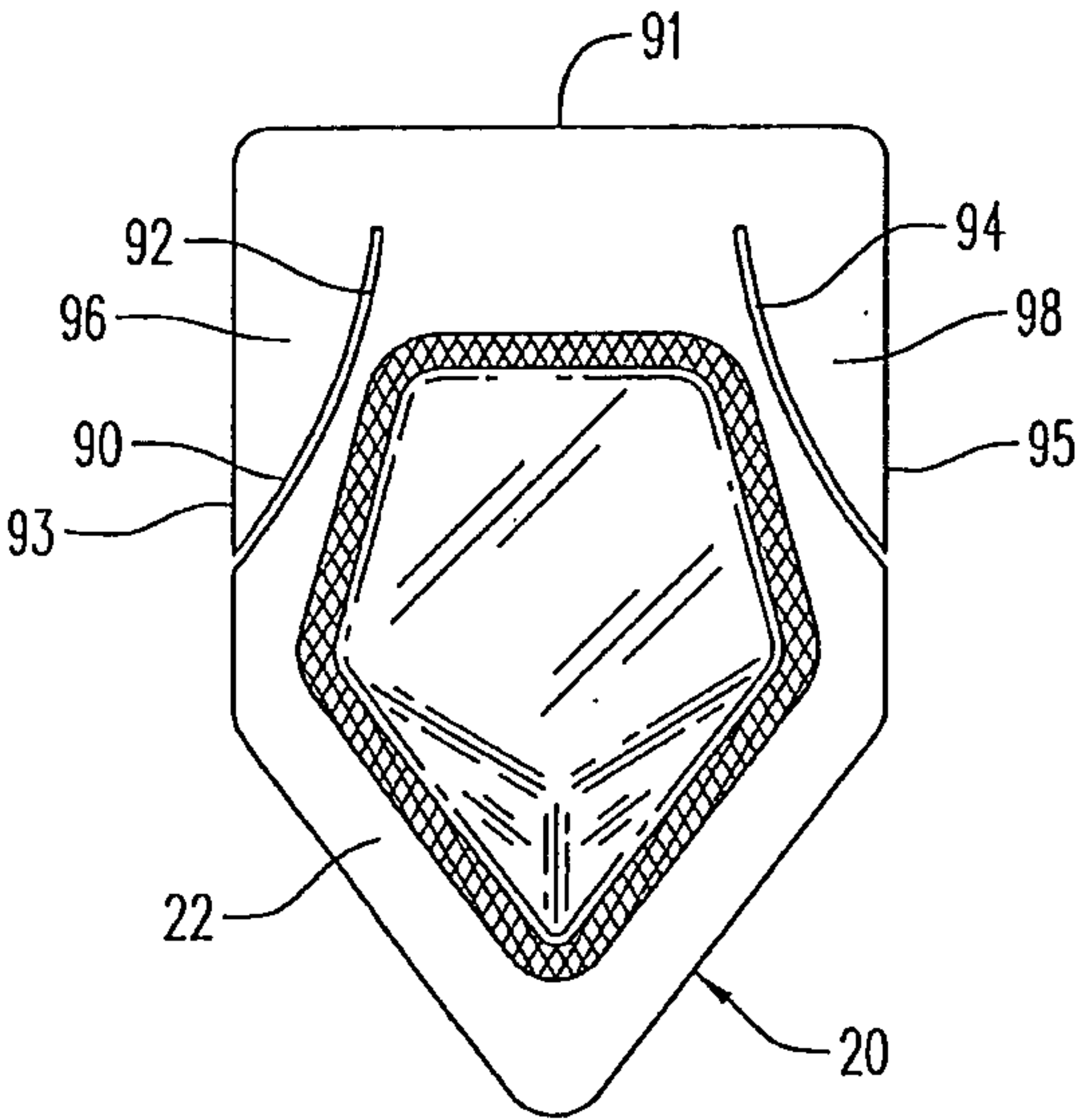


FIG. 16

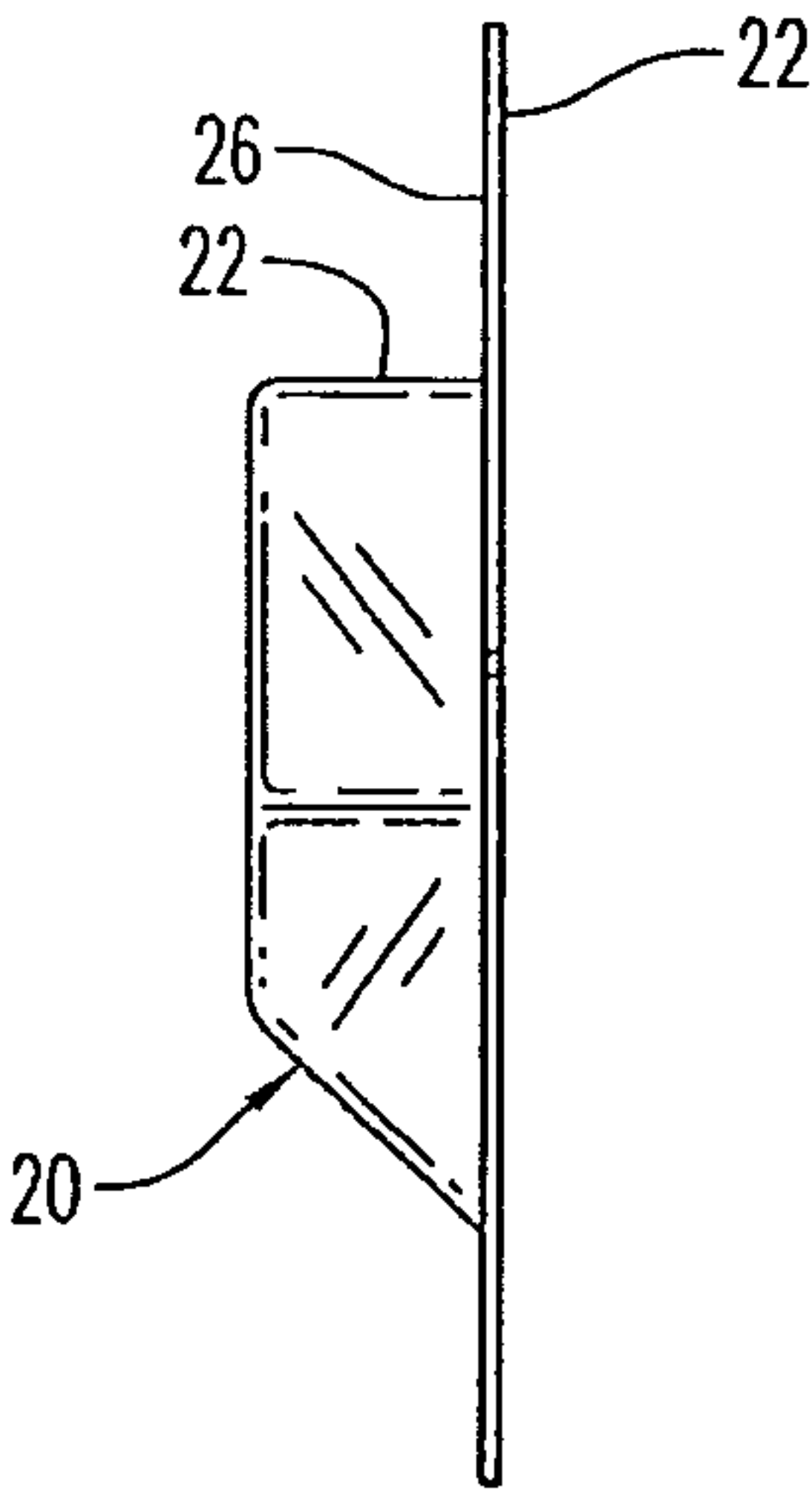


FIG. 17

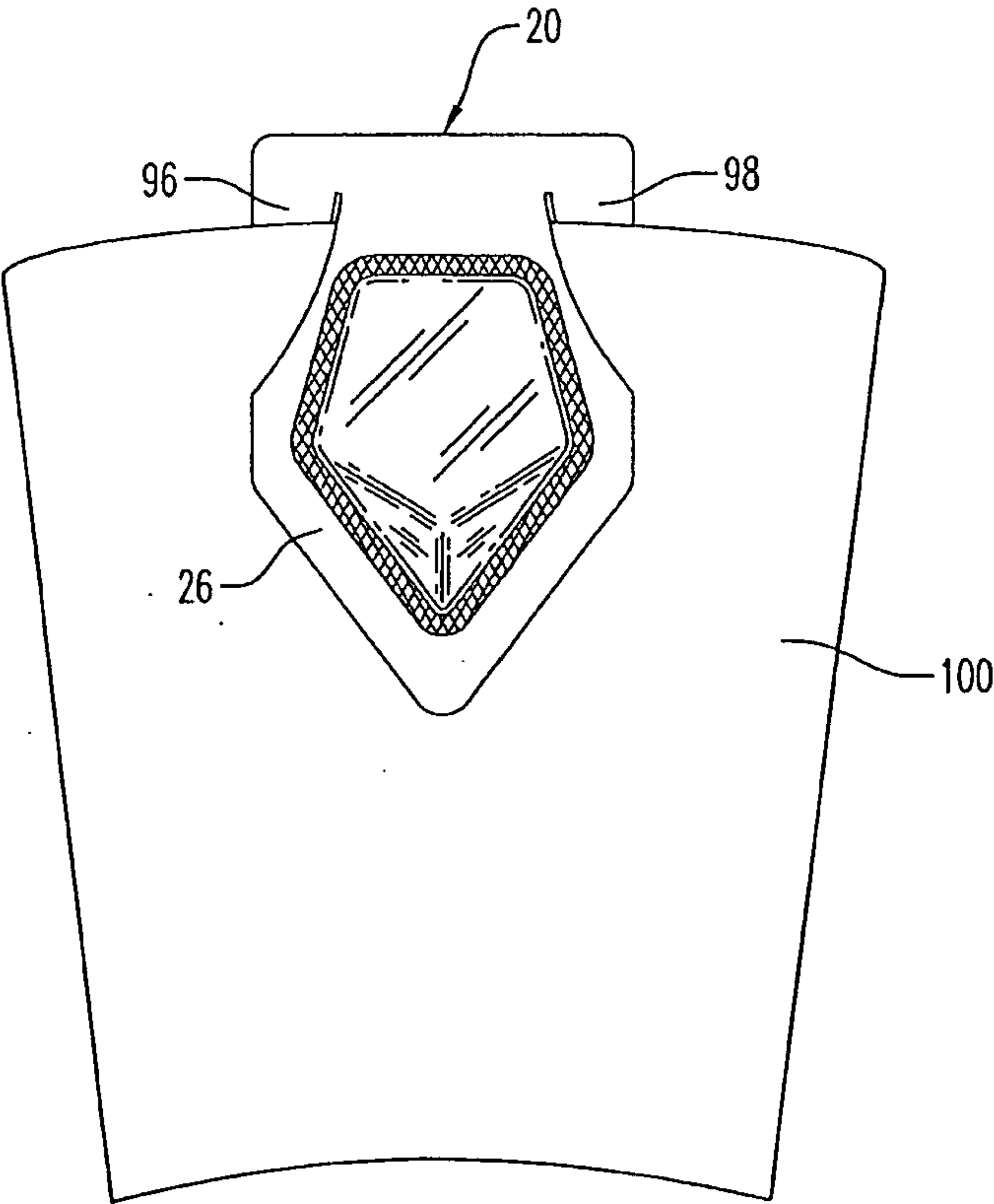
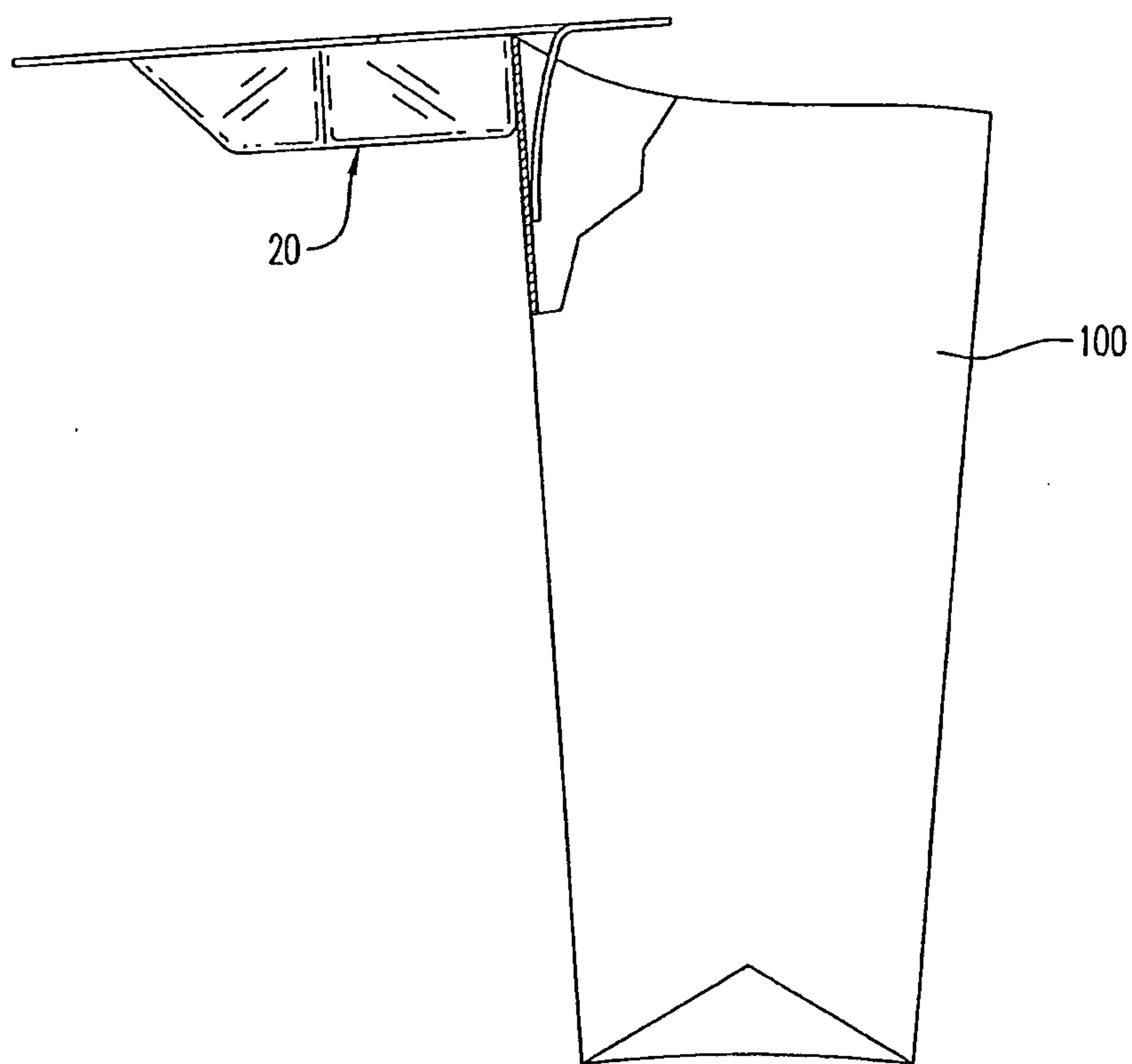


FIG. 18

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**FIG. 19**

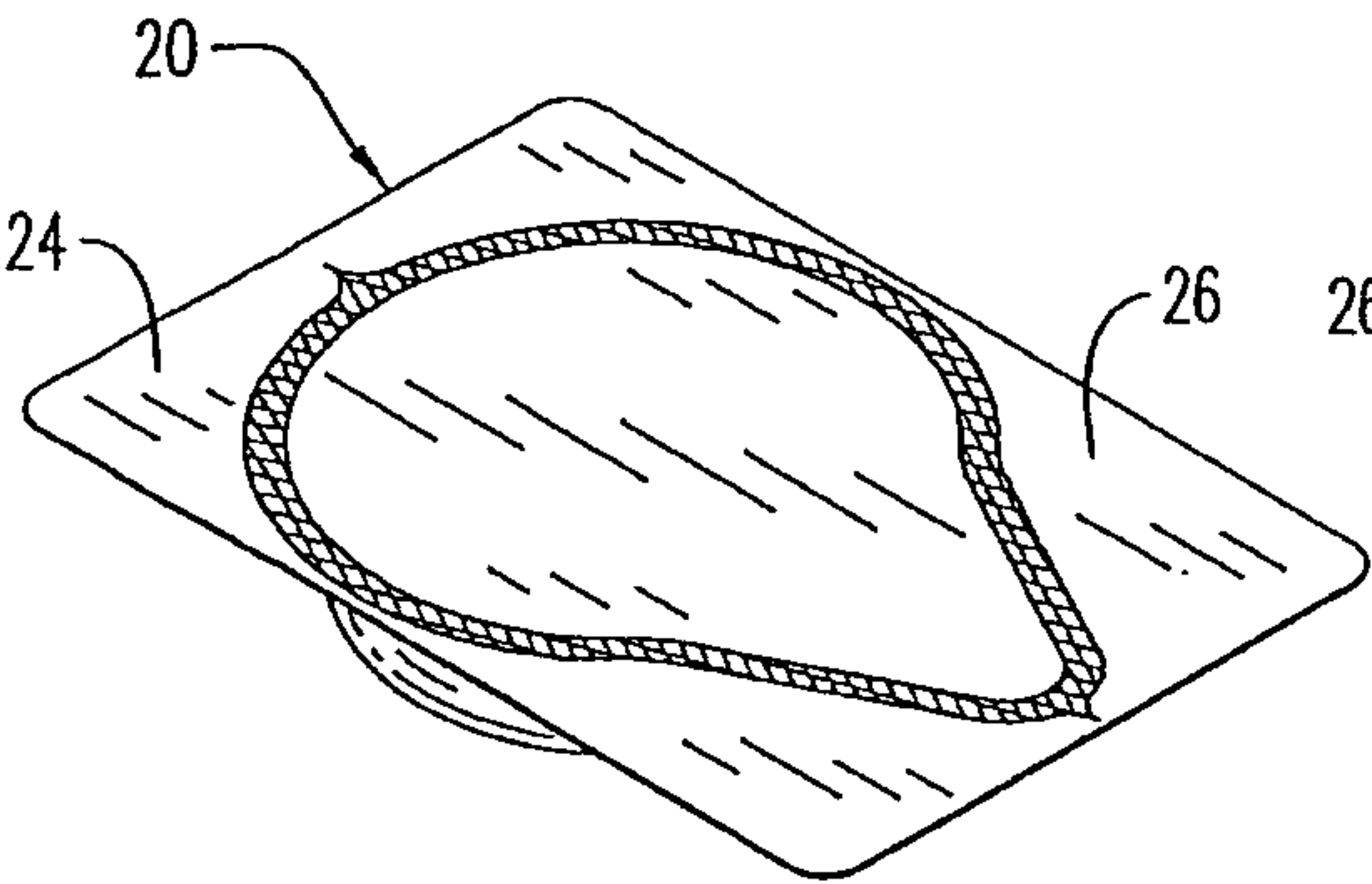


FIG. 20

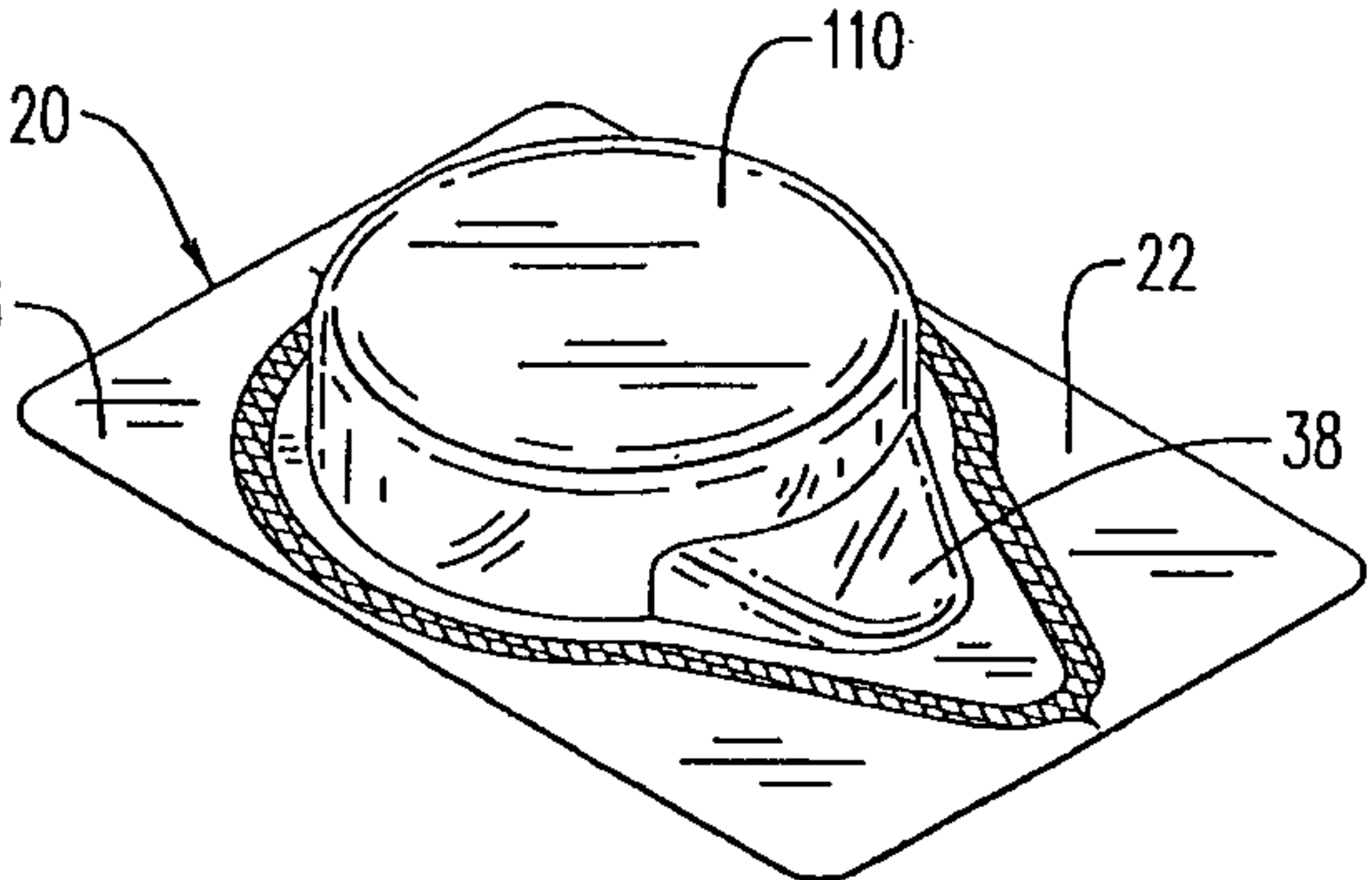


FIG. 21

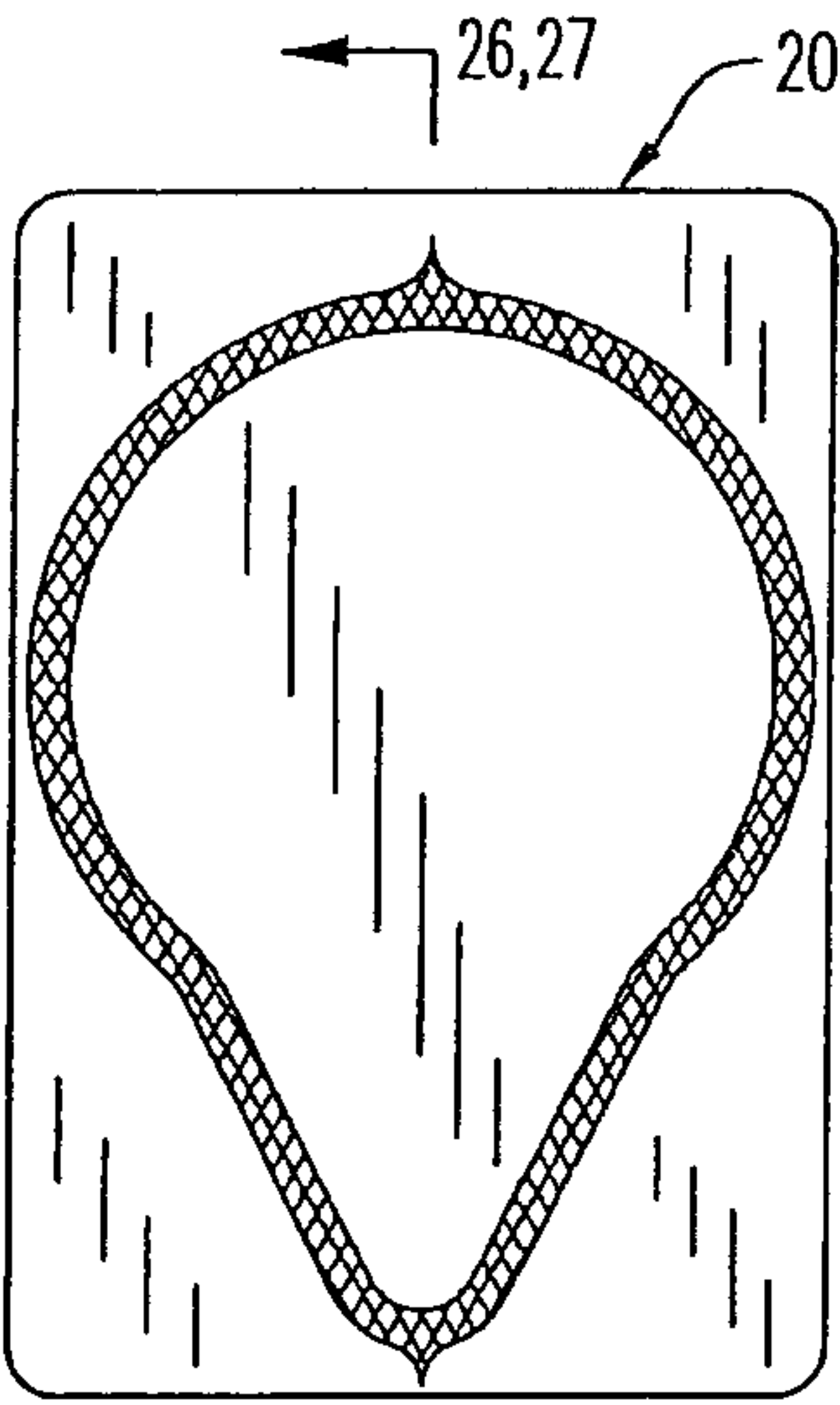


FIG. 22

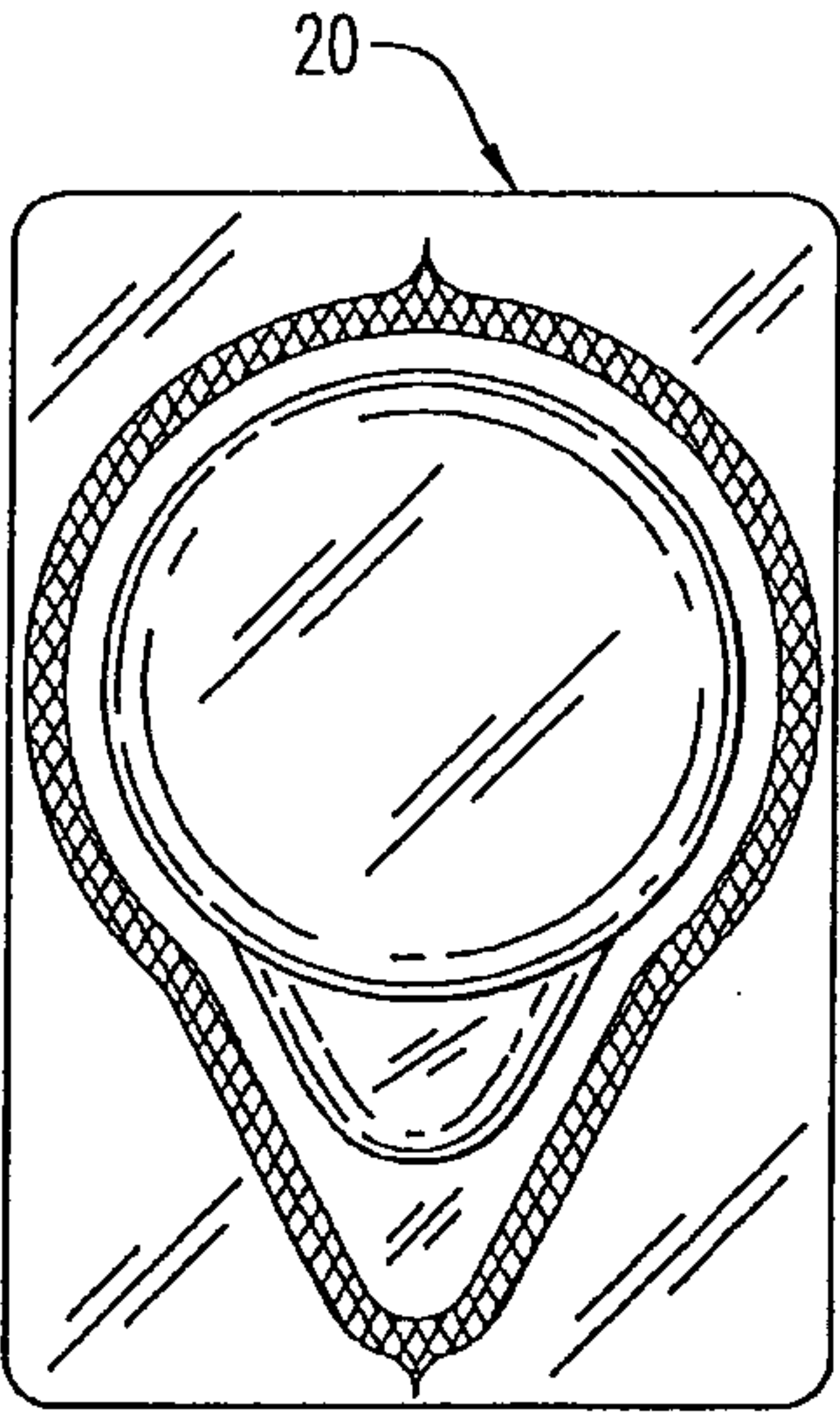


FIG. 23

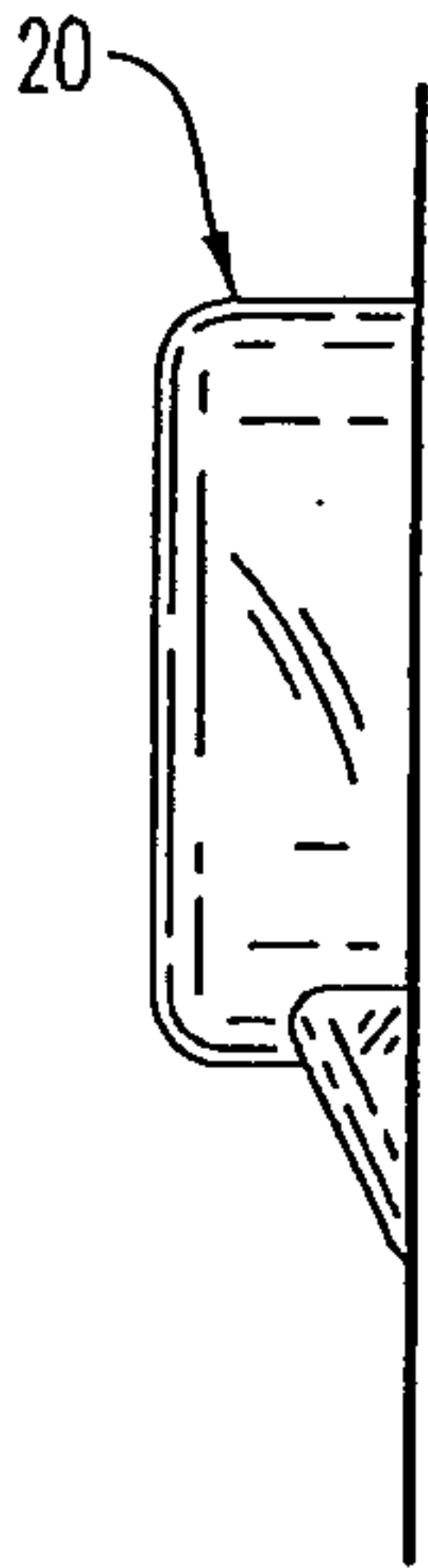


FIG. 24

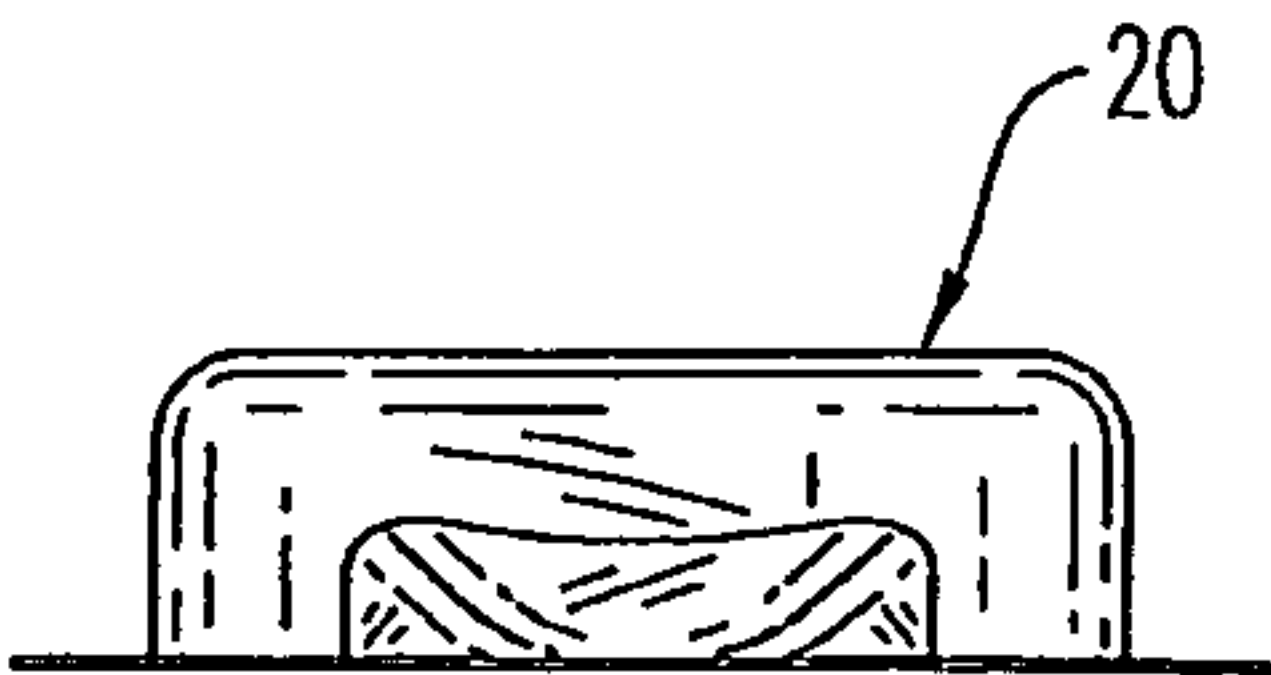
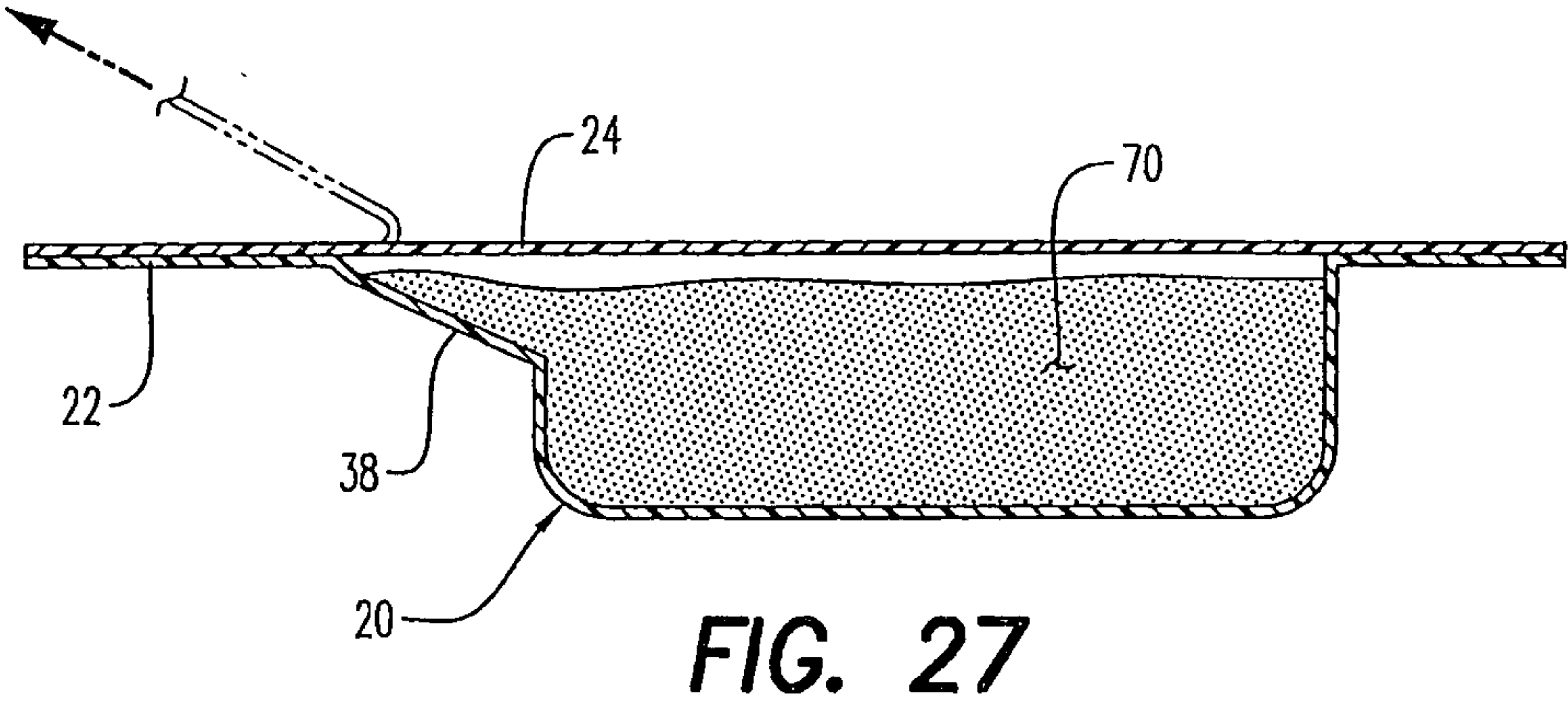
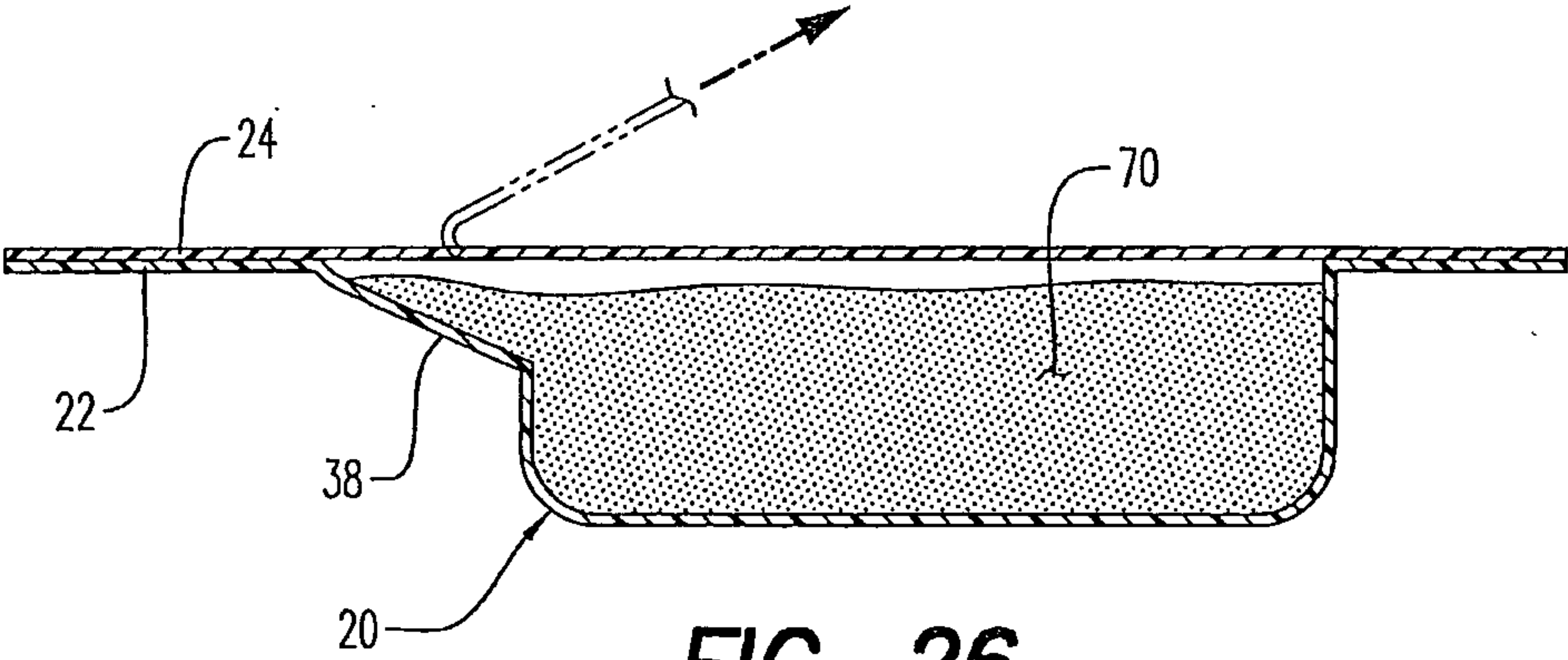


FIG. 25



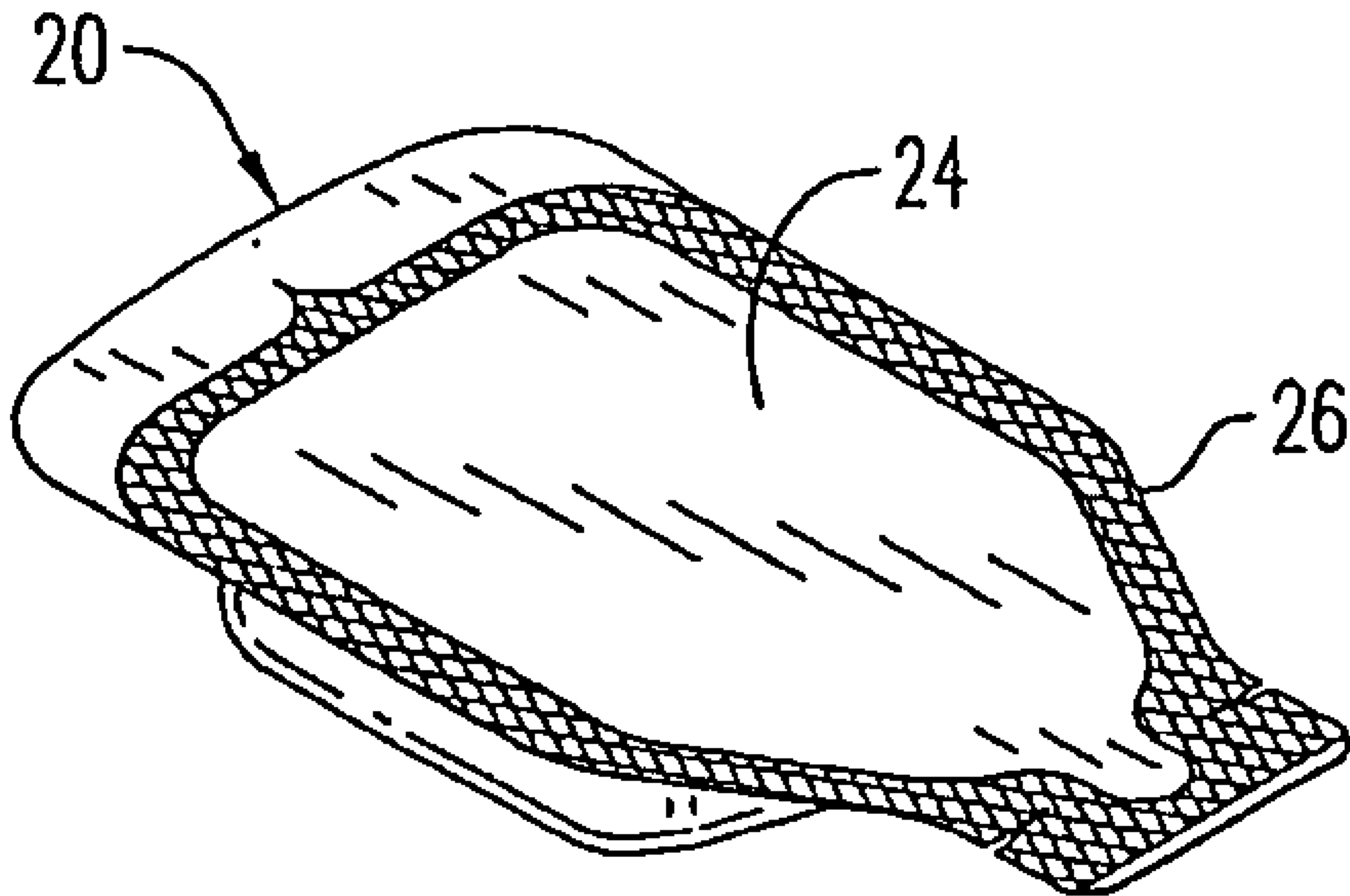


FIG. 1