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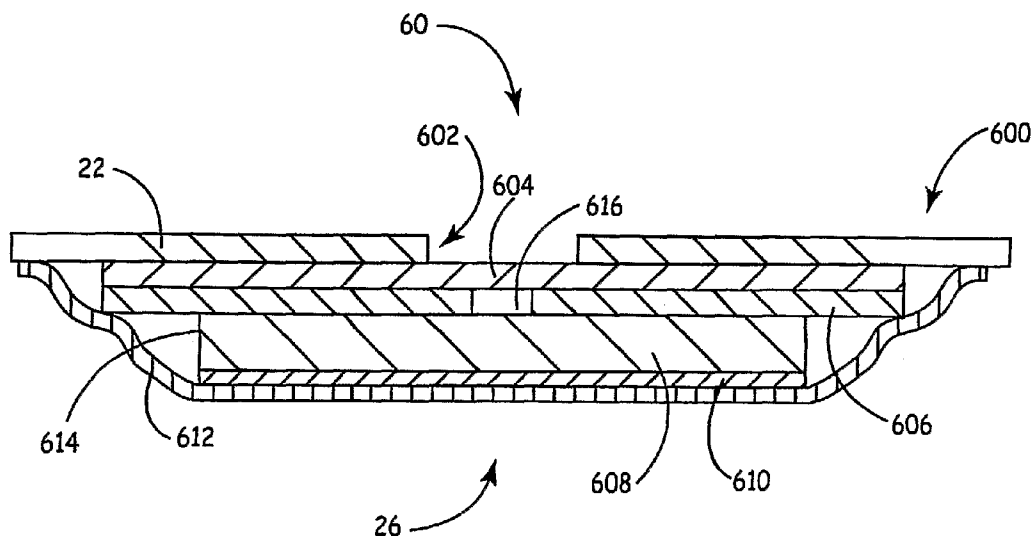
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(54) Title: ADSORBENT OSTOMY BAG VENT



(57) Abstract: An ostomy bag vent is disclosed. An ostomy bag vent includes a media layer exposed to the interior of an ostomy bag that is constructed to allow the flow of gases, but not liquids or solids, into the ostomy bag vent. An adsorbent layer is contained within the ostomy bag vent that is bounded by a base impermeable layer and a second impermeable layer. Gas within the ostomy bag passes through the media layer and is directed through the adsorbent layer by the base impermeable layer and second impermeable layers. Gas not adsorbed within the adsorbent layer passes through a passageway to the exterior of the ostomy bag.

WO 2007/030703 A2

ADSORBENT OSTOMY BAG VENT

Technical Field

The present disclosure relates to vents for ostomy bags, and in particular, to vents for ostomy bags that contain an adsorbent.

Background

An ostomy (including a colostomy, ileostomy, or urostomy) is a type of surgery required when a person loses normal bladder or bowel function due to birth defect, disease, injury, or some other disorder. Cancer patients account for about 80 percent of ostomies. Following an ostomy, bodily wastes need to be expelled through a stoma (surgical opening) on the abdominal wall and into a special appliance called an ostomy bag. Depending on a patient's diet, age, diagnosis, activity level, etc., these wastes can contain significant amounts of gas, such as amines, ammonia, mercaptans, and skatole. These gases can inflate the bag, creating concern or discomfort for the patient. These gases can also compromise the seal between the skin and the bag itself. If vented, however, these same gases can emit unpleasant odors. The presence of an ostomy bag vent may also increase the likelihood of bodily wastes spilling or leaking from the ostomy bag.

There is a need therefore for an ostomy bag vent that allows gases to escape from the ostomy bag and that minimizes the odors associated with the release of gases from the ostomy bag. Further, there is a need for an ostomy bag vent that prevents spilling or leaking of bodily wastes from the ostomy bag.

There is also a need for an ostomy bag vent that is capable of being readily manufactured and attached to the ostomy bag.

Summary

In one aspect, an ostomy bag is disclosed that includes a base impermeable layer attached to an ostomy bag. The base impermeable layer includes a passageway that is in fluid communication with the exterior of the ostomy bag. An adsorbent material layer is in gas-tight contact with the base impermeable layer. An inner impermeable layer is in gas-tight contact with the opposite surface of the adsorbent material layer from the base impermeable layer. A media layer constructed from a material that is resistant to the flow of oil, water, and other liquids but that does not prevent the flow of gases is attached to the base impermeable layer in such a manner as to form a contained space. Gases enter the contained space through the media layer and can flow through the adsorbent material layer and through the passageway in the base impermeable layer to the exterior of the ostomy bag.

Description of the Drawings

FIG. 1 is a cross-sectional view of an ostomy bag vent, showing a base impermeable layer.

FIG. 2 is a partial cut-away top view of the ostomy bag vent of FIG. 1.

FIG. 3 is a cross-sectional view of an alternative embodiment of a base impermeable layer of the ostomy bag vent of FIG. 1.

FIG. 4 is a cross-sectional view of an alternative embodiment of a base impermeable layer of the ostomy bag vent of FIG. 1.

FIG. 5 is a cross-sectional view of an alternative embodiment of an ostomy bag vent.

FIG. 6 is a cross-sectional view of an alternative embodiment of an ostomy bag vent.

FIG. 7 is a cross-sectional view of an alternative embodiment of an ostomy bag vent.

FIG. 8 is a cross-sectional view of an alternative embodiment of an ostomy bag vent.

FIG. 9 is a partial cut-away view of an alternative embodiment of an ostomy bag vent.

FIG. 10 is a side view of the ostomy bag vent of FIG. 9.

FIG. 11 is a cross-sectional view of section A-A of the ostomy bag vent of FIG. 9.

FIG. 12 is a cross-sectional view of section B-B of the ostomy bag vent of FIG. 9.

FIG. 13 is a cross-sectional view of section C-C of the ostomy bag vent of FIG. 9.

FIG. 14 is a partial cut-away view of an alternative embodiment of an ostomy bag vent.

FIG. 15 is a side view of the ostomy bag vent of FIG. 14.

FIG. 16 is a cross-sectional view of section A-A of the ostomy bag vent of FIG. 14.

FIG. 17 is a partial cut-away view of an alternative embodiment of an ostomy bag vent.

FIG. 18 is a side view of the ostomy bag vent of FIG. 14.

FIG. 19 is a cross-sectional view of section A-A of the ostomy bag vent of FIG. 14.

FIG. 20 is a partial cut-away view of an alternative embodiment of an ostomy bag vent.

Detailed Description

Many embodiments of an ostomy bag vent made in accordance with implementations of the invention are possible. One alternative embodiment is depicted in Figures 1 and 2. Ostomy bag vent 20 is joined to ostomy bag 22. The construction of ostomy bag 22 is known to those of skill in the art. Ostomy bag 22 includes at least one passageway 24 that is in fluid communication with exterior 26 of ostomy bag 22. For example, passageway 24 may comprise a single hole in ostomy bag 22 or a plurality of holes. Other configurations of passageway 24 are possible. Passageway 24 may be positioned at any location on ostomy bag 24. For example, passageway 24 may be positioned near a top of ostomy bag 22.

Ostomy bag vent 20 includes a base impermeable layer 28. A substantial majority of base impermeable layer 28 is in contact with ostomy bag 22. Base impermeable layer 28 includes a passageway 30 that is in fluid communication with passageway 24 of ostomy bag 22. For example, passageway 30 may comprise a single hole in base impermeable layer 28 or a plurality of holes. In

one embodiment, passageway 24 may comprise a series of holes that are 0.5 mm in diameter. Other configurations of passageway 30 are possible. Base impermeable layer 28 may comprise any of a number of configurations. For example, in the embodiment shown in Figure 1, base impermeable layer 28 has a generally dish-shaped cross-section, having a relatively uniform first region 32 and a lip region 34 that generally protrudes away from first region 32. Other configurations of base impermeable layer 28 are possible. Base impermeable layer 28 may be constructed from a variety of materials that are chosen to be impermeable to liquids and gasses. For example, base impermeable layer 28 may be constructed from any injection molded polymer. In one embodiment, base impermeable layer 28 is constructed from polypropylene, or alternatively, from low density polypropylene, or from a thermoplastic elastomer such as Santoprene.

In the depicted embodiment, immediately adjacent to base impermeable layer 28 is adsorbent layer 36. Adsorbent layer 36 may comprise any of a number of configurations. For example, in the embodiment depicted in Figure 1, adsorbent layer 36 is generally disk-shaped, having a width dimension that is substantially greater than a thickness dimension. Accordingly, adsorbent layer 36 may be characterized as having a first surface 42, a second surface 46, and an edge surface 44. Adsorbent layer 36 generally comprises a porous material having gas adsorbent properties. For example, adsorbent layer 36 may comprise activated carbon media. Adsorbent layer 36 is sufficiently porous to allow gases to pass through without excessive resistance to flow or pressure loss, and is also sufficiently dense to cause gas passing through adsorbent layer 36 to have

sufficient contact with the adsorbent media to achieve the desired gas adsorption. In the embodiment depicted in Figure 1, second surface 46 of adsorbent layer 36 is in generally gas-tight contact with base impermeable layer 28, such that gases cannot pass between base impermeable layer 28 and adsorbent layer 36 without passing through adsorbent layer 36. In one embodiment, adsorbent layer 36 is attached to base impermeable layer 28 through a pressure sensitive adhesive.

Immediately adjacent to adsorbent layer 36 is second impermeable layer 38. Second impermeable layer 38 is in gas-tight contact with at least a portion of adsorbent layer 36, such that gases cannot pass between second impermeable layer 38 and adsorbent layer 36 without passing through adsorbent layer 36. In the embodiment depicted in Figure 1, second impermeable layer 38 is in contact with the substantial entirety of first surface 42 of adsorbent layer 36. However, in the embodiment depicted in Figure 1, second impermeable layer 38 is not in contact with edge surface 44 of adsorbent layer 36.

At least some portion of adsorbent layer 36 must generally not be in contact with either upper impermeable layer 38 or base impermeable layer 28, so as to define a flow passage 50 accessing adsorbent layer 36. In the embodiment depicted in Figure 1, flow passage 50 comprises edge surface 44 of adsorbent layer 36 that is not in contact with either base impermeable layer 32 or second impermeable layer 38. Second impermeable layer 38 may comprise any of a number of configurations. For example, in the embodiment depicted in Figure 1, second impermeable layer 38 comprises a film-like construction. Second impermeable layer 38 may be constructed from a variety of materials that are

chosen to be impermeable to liquids and gasses. For example, second impermeable layer 38 may comprise polypropylene.

Ostomy bag vent 20 further comprises a media layer 40. Media layer 40 may be constructed from any of a variety of materials chosen to be resistant to the passage of oil, water, and other liquids, but that does not prevent the passage of gases. For example, media layer 40 may be constructed from polytetrafluoroethylene (PTFE) or polytetrafluoroethylene with an oleophobic and hydrophobically treated scrim on one or both sides of the polytetrafluoroethylene. In the embodiment depicted in Figure 1, media layer 40 is in gas-tight contact with base impermeable layer 28. For example, in the embodiment depicted in Figure 1, venting media layer 40 is attached to lip region 34 of base impermeable layer 28.

A contained space 48 exists within ostomy bag vent 20 that is the space bounded by base impermeable layer 28, adsorbent layer 36, second impermeable layer 38, and media layer 40. This contained space 48 provides for fluid communication between the interior of ostomy bag 60 (through media layer 40) and flow passage 50 of adsorbent layer 36.

In use, gases present within interior 60 of bag 22 can flow through media layer 40 and into contained space 48. Because base impermeable layer 32 is in gas-tight contact with ostomy bag 22, gases cannot pass directly from interior 60 through passageway 24 to the exterior 26 of ostomy bag 22. When gases pass through media layer 40 and into contained space 48, the gases cannot pass directly to passageway 24 to the exterior of ostomy bag 22 because adsorbent layer 36 is in gas-tight contact with base impermeable layer 32 and second

impermeable layer 38. Gases within contained space 48 can only flow through flow passage 50 and into adsorbent layer 36. As gases flow into and through adsorbent layer 36, the adsorbent media of adsorbent layer 36 adsorbs noxious or unpleasant gases. Gases travel through adsorbent layer 36 to passageway 30, where the gases can pass through passageway 24 to the exterior 26 of ostomy bag 20.

Sufficient adsorptive capacity to adequately adsorb these gases is provided by having sufficient adsorptive surface area in absorptive layer 36. The total absorptive surface area is determined by both the absorptive surface area per given flow distance through the absorptive media of absorptive layer 36, and by the total flow distance through the absorptive media of absorptive layer 36. The absorptive surface area per given flow distance is determined by the porosity (also called density) of the absorptive media. The total flow distance through the absorptive media is determined by the dimensions of the absorptive layer between passageway 30 and passageway 50. In the embodiment depicted in Figure 1, because the adsorbent layer has a width dimension that is substantially greater than a thickness dimension, and because second impermeable layer 38 covers the first surface 42 of adsorbent layer 36, gases must flow through the relatively longer flow distance defined by the width of adsorbent layer 36 and not merely the relatively shorter flow distance defined by the thickness of adsorbent layer 36. It is generally also desired to limit the resistance to gas flow (also called gas flow pressure drop). However, there may be a tradeoff in the configuration of the adsorptive layer 36 between the amount of adsorptive surface area provided and the amount of resistance to gas flow. Reducing the porosity of

the adsorptive media and increasing the adsorptive total flow distance tends to increase the adsorptive surface area but also tends to increase the resistance to gas flow. Therefore, it is generally desired that the adsorptive surface area not be increased more than necessary to adsorb the desired gases so as to minimize the resistance to flow through the adsorptive layer 36.

The gases that are not adsorbed within adsorbent layer 36 flow out of passageway 30 and passageway 24 to the exterior 26 of ostomy bag vent 20.

It is desired that ostomy bag vent 20 be robustly secured to ostomy bag 22. Many embodiments of attachments are possible. For example, in the embodiment depicted in Figure 1, a pressure sensitive adhesive may be provided on surface 52 of base impermeable layer 28 that operatively attaches ostomy bag vent 20 to ostomy bag 22. Similarly, a thermal bond may be formed between surface 52 of base impermeable layer 28 and ostomy bag 22. In an alternative embodiment of base impermeable layer 28 depicted in Figure 3, surface 52 may further comprise one or more weld rings 54. Weld rings 54 may be configured across the entire surface 52, or may be configured along surface 52 only near the outer perimeter 56 of base impermeable layer 28. Weld rings 54 assist with forming a thermal bond between surface 52 and ostomy bag 22. Yet another alternative embodiment of base impermeable layer 28 is depicted in Figure 4. Base impermeable layer 28 may further comprise a weld flange 58 that provides a region for forming a thermal bond with ostomy bag 22.

Many other embodiments of ostomy bag vent 20 are possible. An example of an alternative embodiment is depicted in Figure 5. The alternative embodiment depicted in Figure 5 is constructed according to the general

principles set forth above. Ostomy bag vent 120 comprises a base impermeable layer 128, formed generally of a film of impermeable material such as polypropylene. Base impermeable layer 128 is attached to ostomy bag 22, such as by pressure sensitive adhesive or thermal bonding. Immediately adjacent to base impermeable layer 128 and forming a gas-tight seal therebetween is adsorbent layer 136. Immediately adjacent to adsorbent layer 136 and forming a gas-tight seal therebetween is second impermeable layer 138, formed generally of a film of impermeable material such as polypropylene.

Media layer 140 is attached about the perimeter of base impermeable layer 128 and over second impermeable layer 138. Media layer 140 may be constructed from a variety of materials chosen to be resistant to the passage of oil, water, and other liquids, and that do not prevent the passage of gases, such as polytetrafluoroethylene (PTFE) or polytetrafluoroethylene with an oleophobic and hydrophobically treated scrim on one or both sides of the polytetrafluoroethylene. Contained space 148 is formed by the overhang from where media layer 140 contacts second impermeable layer 138 or adsorbent layer 136 to where media layer 140 contacts base impermeable layer 128.

In use, gases present within interior 60 of ostomy bag 22 can flow through media layer 140, into contained space 148, and through flow passage 150 into adsorbent layer 136. Gases that are not adsorbed within adsorbent layer 136 flow out through passageway 130 to the exterior 26 of ostomy bag 20.

Another alternative embodiment of an ostomy bag vent is depicted in Figure 6. The alternative embodiment depicted in Figure 6 is constructed according to the general principles set forth above. Ostomy bag vent 600 is

configured for attachment to the exterior 26 of ostomy bag 22 over an opening 602 in ostomy bag 22. Vent 600 includes a media layer 604. Media layer 604 is constructed from any of a variety of materials chosen to be resistant to the passage of oil, water, and other liquids, and that do not prevent the passage of gases. In one embodiment, media layer 604 is constructed from oleophobic and hydrophobic media. For example, media layer may be constructed from expanded PTFE. A barrier layer 606 is provided on a side of media layer that is opposite from ostomy bag 22. Barrier layer 606 is constructed from material that is impermeable to the flow of liquids and gases.

Barrier layer 606 generally covers media layer 604 except at an opening 616 that is in alignment with opening 602 of ostomy bag 22. An adsorbent layer 608 is located against barrier layer 606, along the surface of barrier layer 606 that is opposite to media layer 604. Adsorbent layer 608 is constructed from a material having adsorbent properties, such as activated carbon. A second barrier layer 610 is located against adsorbent layer 608, opposite to barrier layer 606. Barrier layer 610 is also constructed from material that is impermeable to the flow of liquids or gases. Barrier layer 610 generally covers adsorbent layer 608. A covering layer 612 is provided that attaches to ostomy bag 22 and covers barrier layer 610. Covering layer 612 may be constructed from non-woven fabric, and is generally permeable to gases. Covering layer 612 may be bonded to barrier layer 606 along the edges of barrier layer 606, thereby providing a single-piece vent 600 that can readily be attached to the ostomy bag 22, such as by heat welding along the edges of the covering layer 612. In operation, gases present within interior 60 of ostomy bag 22 can flow through opening 602 into

media layer 604, through the opening 616 in barrier layer 606, into media layer 608, out through an edge 614 of media layer 608, and through covering layer 612 to exterior 26 of ostomy bag 22.

Another alternative embodiment of an ostomy bag vent is depicted in Figure 7. The alternative embodiment depicted in Figure 7 is constructed according to the general principles set forth above. Ostomy bag vent 700 is configured for attachment to the exterior 26 of ostomy bag 22 over an opening 702 in ostomy bag 22. Vent 700 includes a media layer 704. Media layer 704 is constructed from any of a variety of materials chosen to be resistant to the passage of oil, water, and other liquids, and that do not prevent the passage of gases. In one embodiment, media layer 704 is constructed from oleophobic and hydrophobic media. For example, media layer may be constructed from expanded PTFE. A barrier layer 706 is provided on a side of media layer 704 that is opposite from ostomy bag 22. Barrier layer 706 is constructed from material that is impermeable to the flow of liquids or gases.

Barrier layer 706 generally covers media layer 704 except at an annular opening 716 formed around opening 702 of ostomy bag 22. An adsorbent layer 708 is located against barrier layer 706, along the surface of barrier layer 706 that is opposite to media layer 704. Adsorbent layer 708 is constructed from a material having adsorbent properties, such as activated carbon. A covering layer 712 is provided that attaches to ostomy bag 22 and covers adsorbent layer 708, except at an opening 718 formed at an approximate center of adsorbent layer 708. Covering layer 712 is constructed from a material that is impermeable to the flow of liquids or gases. A second media layer 720 is provided between adsorbent

layer 708 and covering layer 712 at opening 718. In operation, gases present within interior 60 of ostomy bag 22 can flow through opening 702 into media layer 704, through the opening 716 in barrier layer 706, into edge 714 of media layer 708, through second media layer 720, and out through opening 718 to exterior 26 of ostomy bag 22. In one embodiment, media layer 720 is constructed from oleophobic and hydrophobic media. For example, media layer 720 may be constructed from expanded PTFE.

Another alternative embodiment of an ostomy bag vent is depicted in Figure 8. The alternative embodiment depicted in Figure 8 is constructed according to the general principles set forth above. Ostomy bag vent 800 is configured for attachment to the exterior 26 of ostomy bag 22 over an opening 802 in ostomy bag 22. Vent 800 includes a media layer 804. Media layer 804 is constructed from any of a variety of materials chosen to be resistant to the passage of oil, water, and other liquids, and that do not prevent the passage of gases. In one embodiment, media layer 804 is constructed from oleophobic and hydrophobic media. For example, media layer may be constructed from expanded PTFE. A barrier layer 806 is provided on a side of media layer 804 that is opposite from ostomy bag 22. Barrier layer 806 is constructed from material that is impermeable to the flow of liquids or gases. Barrier layer 806 generally covers media layer 804 except at an annular opening 816 formed around opening 802 of ostomy bag 22. An adsorbent layer 808 is located against barrier layer 806, along the surface of barrier layer 806 that is opposite to media layer 804. Adsorbent layer 808 is constructed from a material having adsorbent properties, such as activated carbon. A covering layer 812 is provided that

attaches to ostomy bag 22 and covers adsorbent layer 808. Covering layer 812 is constructed from a material that is impermeable to the flow of liquids or gases. In one embodiment, covering layer 812 is constructed from polypropylene, or alternatively, from low density polypropylene, or thermoplastic elastomer such as Santoprene.

Covering layer 812 defines a plurality of openings 818 at an approximate center of adsorbent layer 808. Openings 818 are preferably sufficiently small to adequately contain adsorbent layer 808 within ostomy bag vent 800, but preferably define a sufficiently large flow area to allow for sufficient gas flow. In operation, gases present within interior 60 of ostomy bag 22 can flow through opening 802 into media layer 804, through the opening 816 defined by barrier layer 806, into edge 814 of media layer 808, and out through openings 818 to exterior 26 of ostomy bag 22.

A further embodiment of an ostomy bag vent is depicted in Figure 9. This embodiment is a flange mounted vent filter having a lateral filter path, and a first side of vent 220 is shown in Figure 9 in a partial cutaway view. Figure 10 shows an opposite side of the ostomy bag vent 220 of Figure 9. Figures 11, 12, and 13 show cross sections A-A, B-B, and C-C, respectively, as indicated in Figure 9. Ostomy bag vent 220 functions generally as described above. Ostomy bag vent 220 is shown attached to flange 223 that is configured for attachment to a vent of an ostomy bag 260. Impermeable layer 228 is bonded, integrally formed, or otherwise attached to flange 223 and forms a channel 230 that contains a media 236. Media 236 is contained within channel 230 by means of a hydrophobic and oleophobic material layer 239. The open face 232 of channel 230 is covered with

impermeable film 234 that is positioned under material layer 239. An inlet opening 238 is provided in impermeable film 234. An outlet opening 240 is located in impermeable layer 228 at a location that is distant from inlet 238 along channel 230. Outlet opening may be a single opening, a plurality of openings spaced closely together, a mesh-like structure, or any other gas permeable configuration.

In operation, vent 220 is attached to an ostomy bag so that inlet opening 238 registers with a corresponding opening in the ostomy bag. Gases pass through inlet opening 238 and into media 236 contained within channel 230. Liquids are prevented from entering through opening 238 and passing into media 236 by the presence of hydrophobic and oleophobic material layer 240. After traveling some distance through media 236, gases exit channel 230 through outlet opening 240 to the atmosphere.

A further embodiment of an ostomy bag vent 320 is depicted in Figure 14. The embodiment of Figure 14 is a flange mounted vent filter having an inside to center filter path. A first side of vent 320 is shown in Figure 14 in a partial cutaway view. Figure 15 shows an opposite side of the ostomy bag vent 320 of Figure 14. Figure 16 shows cross section A-A as indicated in Figure 14. Ostomy bag vent 320 functions generally as described above. Ostomy bag vent 320 is shown attached to flange 323 that is configured for attachment to a vent of an ostomy bag 360. Impermeable layer 328 is bonded, integrally formed, or otherwise attached to flange 323 and forms a channel 330 that contains a media 336. Media 336 is contained within channel 330 by means of a hydrophobic and oleophobic material layer 340. The open face 332 of channel 330 is covered with

impermeable film 334 that is positioned under material layer 340 except along edges, forming an annular inlet opening 338 in impermeable film 334. Inlet opening 338 is characterized by an opening width "x", shown in Figure 16, that is provided generally around the periphery defined by impermeable layer 328. An outlet opening 342 is located on a surface of channel 330 that is opposite but not aligned with open face 338. In the embodiment of Figure 14, outlet opening 342 comprises a plurality of holes in impermeable layer 328. Outlet opening 342 may also be configured as a slit, a mesh-like structure, or any other gas permeable configuration. Outlet 342 is generally spaced evenly along layer 328 between the inlet openings 338 positioned opposite from outlet 342.

In operation, vent 320 is attached to an ostomy bag so that inlet opening 338 registers with a corresponding opening or channel in the ostomy bag. Gases pass through inlet opening 338 and into media 336 contained within channel 330. Liquids are prevented from entering through opening 338 and passing into media 336 by the presence of hydrophobic and oleophobic material layer 340. Gases travel through media 336 from the periphery of channel 330 as defined by inlet 338, and these gases exit channel 330 through outlet opening 342 to the atmosphere.

A further embodiment of an ostomy bag vent 420 is depicted in Figure 17. The embodiment of Figure 17 is a flange mounted vent filter having a radial filter path. A first side of vent 420 is shown in Figure 17 in a partial cutaway view. Figure 18 shows an opposite side of the ostomy bag vent 420 of Figure 17. Figure 19 shows cross section A-A as indicated in Figure 17. Ostomy bag vent 420 functions generally as described above. Ostomy bag vent 420 is shown

attached to flange 423 that is configured for attachment to a vent of an ostomy bag 460. Impermeable layer 428 is bonded, integrally formed, or otherwise attached to flange 423 and forms a channel 430 that contains a media 436.

Media 436 is contained within channel 430 by means of a hydrophobic and oleophobic material layer 441. The open face 432 of channel 430 is covered with impermeable film 434 that is positioned over material layer 440. An inlet opening 438 is provided in impermeable film 434. An outlet opening 440 is located in impermeable layer 428 along a peripheral radial surface 445 of impermeable layer 428. Outlet opening 440 may be a single opening, a plurality of openings spaced closely together, a mesh-like structure, or any other gas permeable configuration.

In operation, vent 420 is attached to an ostomy bag so that inlet opening 438 registers with a corresponding opening or channel in the ostomy bag. Gases pass through inlet opening 438 and into media 436 contained within channel 430. Liquids are prevented from entering through opening 438 and passing into media 436 by the presence of hydrophobic and oleophobic material layer 441. After traveling through media 436, gases exit channel 430 through outlet opening 440 to the atmosphere.

Yet another alternative embodiment of an ostomy bag vent is depicted in Figure 20. The alternative embodiment depicted in Figure 20 is constructed according to the general principles set forth above. Ostomy bag vent 220 is configured to attach to ostomy bag 222, which further comprises flange 223. Passageway 224 is constructed to provide fluid communication with the exterior 226 of ostomy bag 222. Flange 223 forms a base impermeable layer 228. A

media layer 240 is attached to flange 223 and is exposed to interior 260 of ostomy bag 222. Media layer 240 is also in contact with second impermeable layer 238, which covers adsorbent layer 235 except in area 248. Media layer 240 may be constructed from a variety of materials chosen to be resistant to the passage of oil, water, and other liquids, and not resistant to the passage of gases, such as polytetraflouroethylene (PTFE) or polytetraflouroethylene with an oleophobic and hydrophobically treated scrim on one or both sides of the polytetraflouroethylene. Gas within the interior 260 of ostomy bag 222 may pass through media layer 240 to contained space 248. From area 248, gas may pass through adsorbent layer 236 to passageway 224. Gas not adsorbed within adsorbent layer 236 passes through passageway 224 to the exterior of ostomy bag 222.

What is claimed is:

1. A gas filter for use over a ventilation opening of a container, the container configured for receiving bodily wastes from a stoma, the gas filter comprising:

(i) a substantially hydrophobic and substantially oleophobic media layer covering the ventilation opening, a first surface of the media layer being in gas-tight contact with an external surface of the container;

(ii) a first barrier layer in gas-tight contact with a second surface of the media layer except at an opening in the first barrier layer in register with the container ventilation opening, the first barrier layer being impermeable to gases and liquids;

(iii) an adsorbent layer having a first surface in gas-tight contact with the first barrier layer, the adsorbent layer having a second surface opposite the first surface;

(iv) a second barrier layer in gas-tight contact with the second surface of the adsorbent layer; and

(v) a covering layer configured for gas-tight attachment to an external surface of the container and covering the media layer, first and second barrier layers, and adsorbent layer, the covering layer being gas-permeable.

2. The gas filter of claim 1, wherein the covering layer comprises PTFE.

3. A gas filter for use over a ventilation opening of a container, the container configured for receiving bodily wastes from a stoma, the gas filter comprising:

(i) a hydrophobic and oleophobic media layer covering the ventilation opening, a first surface of the media layer being in gas-tight contact with an external surface of the container;

(ii) a first barrier layer in gas-tight contact with a second surface of the media layer, the first barrier layer being impermeable to gases and liquids and the first barrier layer defining an annular opening region in conjunction with the container ventilation opening;

(iii) an adsorbent layer having a first surface in gas-tight contact with the first barrier layer, the adsorbent layer having a second surface opposite the first surface;

(iv) a covering layer configured for gas-tight attachment to an external surface of the container and covering the media layer, first and second barrier layers, and adsorbent layer, the covering layer being impermeable and defining an opening near a center; and

(v) a non-woven media layer in gas-tight attachment to the covering layer over the opening in the covering layer.

4. A gas filter for use over a ventilation opening of a container, the container configured for receiving bodily wastes from a stoma, the gas filter comprising:

(i) a hydrophobic and oleophobic media layer covering the ventilation opening, a first surface of the media layer being in gas-tight contact with an external surface of the container;

(ii) a first barrier layer in gas-tight contact with a second surface of the media layer, the first barrier layer being impermeable to gases and liquids and the first barrier layer defining an annular opening region in conjunction with the container ventilation opening;

(iii) an adsorbent layer having a first surface in gas-tight contact with the first barrier layer, the adsorbent layer having a second surface opposite the first surface; and

(iv) a covering layer configured for gas-tight attachment to an external surface of the container and covering the media layer, first and second barrier layers, and adsorbent layer, the covering layer being impermeable and defining a plurality of openings near a center.

5. A gas filter for use with an ostomy bag, the ostomy bag having an opening configured to receive bodily wastes from a stoma of a patient and a ventilation opening for venting gases from the ostomy bag, the gas filter comprising:

- (i) a flange defining a channel, the channel having an open face and a closed bottom face, the flange configured for attachment to the opening in the ostomy bag and having a portion of the channel in alignment with the ventilation opening when attached to the ostomy bag, the channel being impermeable;
- (ii) adsorbent media within the channel;
- (iii) an impermeable barrier layer covering a portion of the open face of the channel and defining an inlet opening in registration with the ventilation opening of the ostomy bag;
- (iv) an oleophobic and hydrophobic media layer covering at least the inlet opening defined by the barrier layer; and
- (v) an outlet opening in the channel configured to allow passage of gases from the adsorbent media to the exterior of the ostomy bag.

6. The gas filter of claim 5, where the inlet opening is located distant through the adsorbent media from the outlet opening.

7. The gas filter of claim 5, wherein the outlet opening in the channel is in the closed bottom face.

8. The gas filter of claim 7, wherein the channel is positioned radially around the flange, the channel being characterized by a first edge being near the opening in the ostomy bag and a second edge being distant from the opening in the ostomy bag, and wherein the inlet opening defined by the barrier layer comprises a thin opening adjacent to both the first and second edges of the channel, and the outlet opening comprising a plurality of openings centered between the first and second edges.

9. The gas filter of claim 5, wherein the channel is positioned radially around the flange, the channel being characterized by a first edge being near the opening in the ostomy bag and a second edge being distant from the opening in the ostomy bag, and wherein the inlet opening defined by the barrier layer

comprises a thin opening adjacent to the first edge of the channel, and the outlet opening comprising an opening in the second edge of the channel.

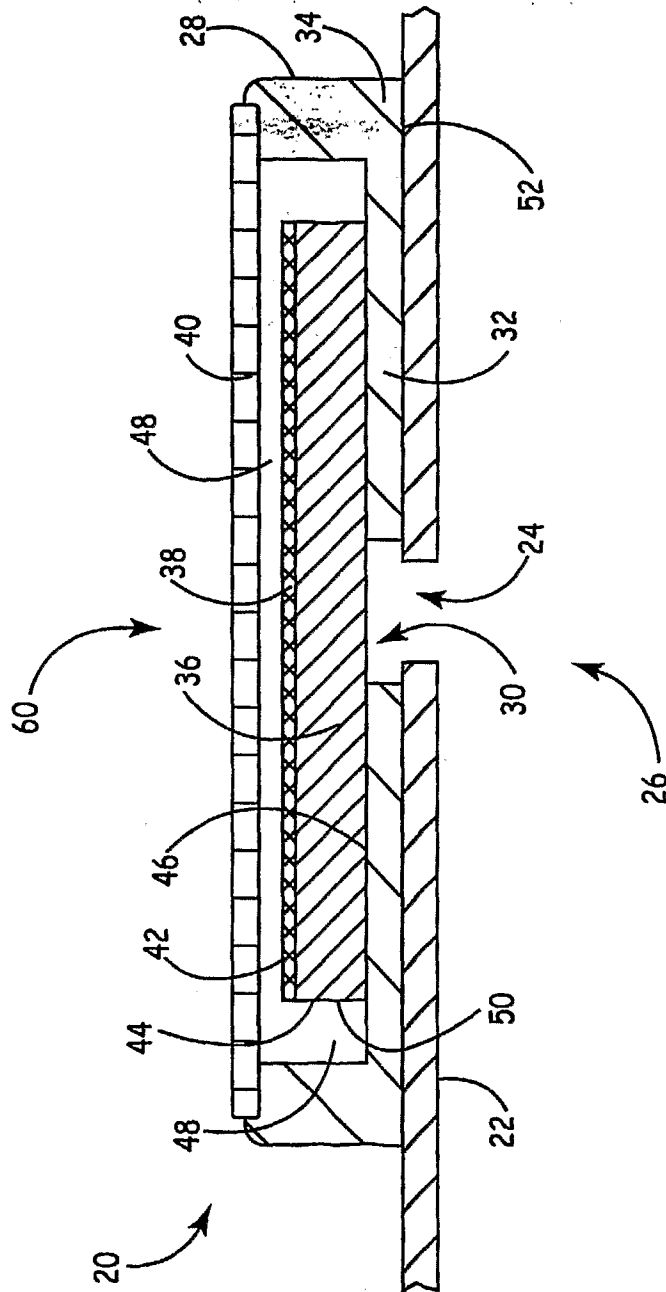


FIG. 1

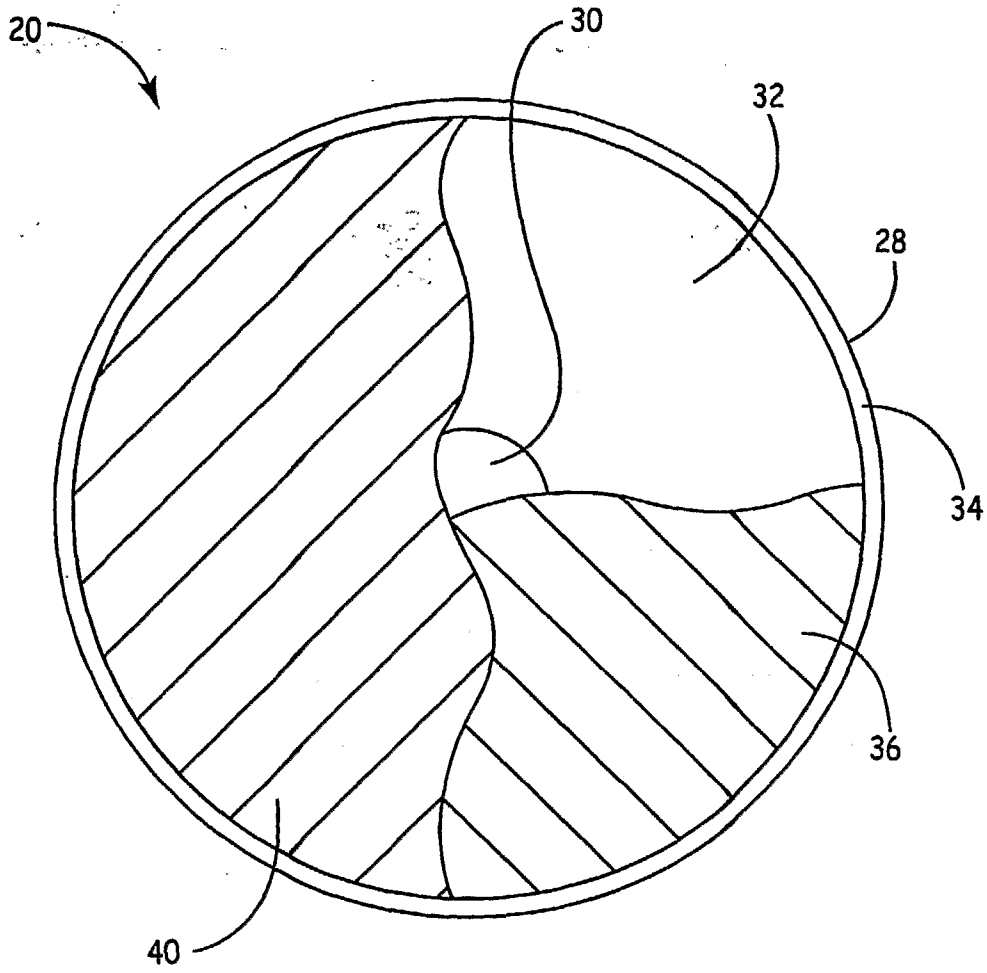


FIG. 2

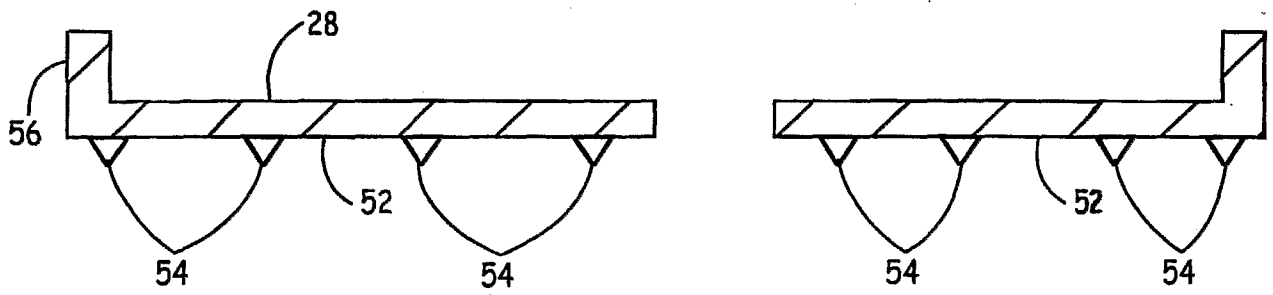


FIG. 3

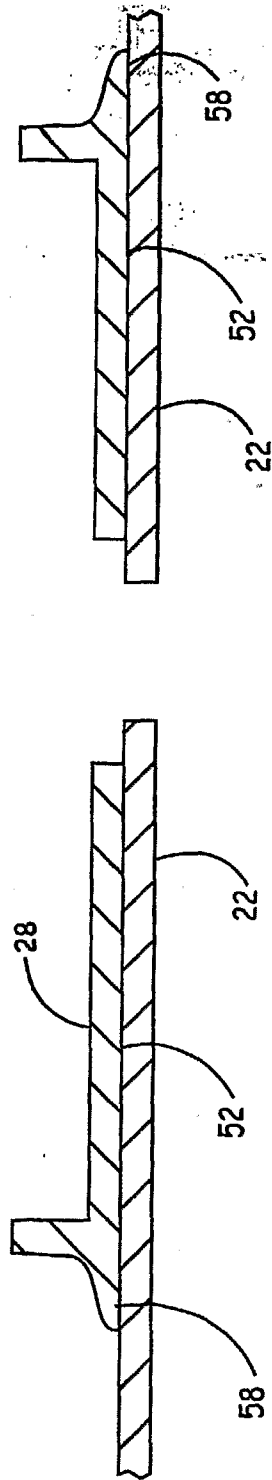


FIG. 4

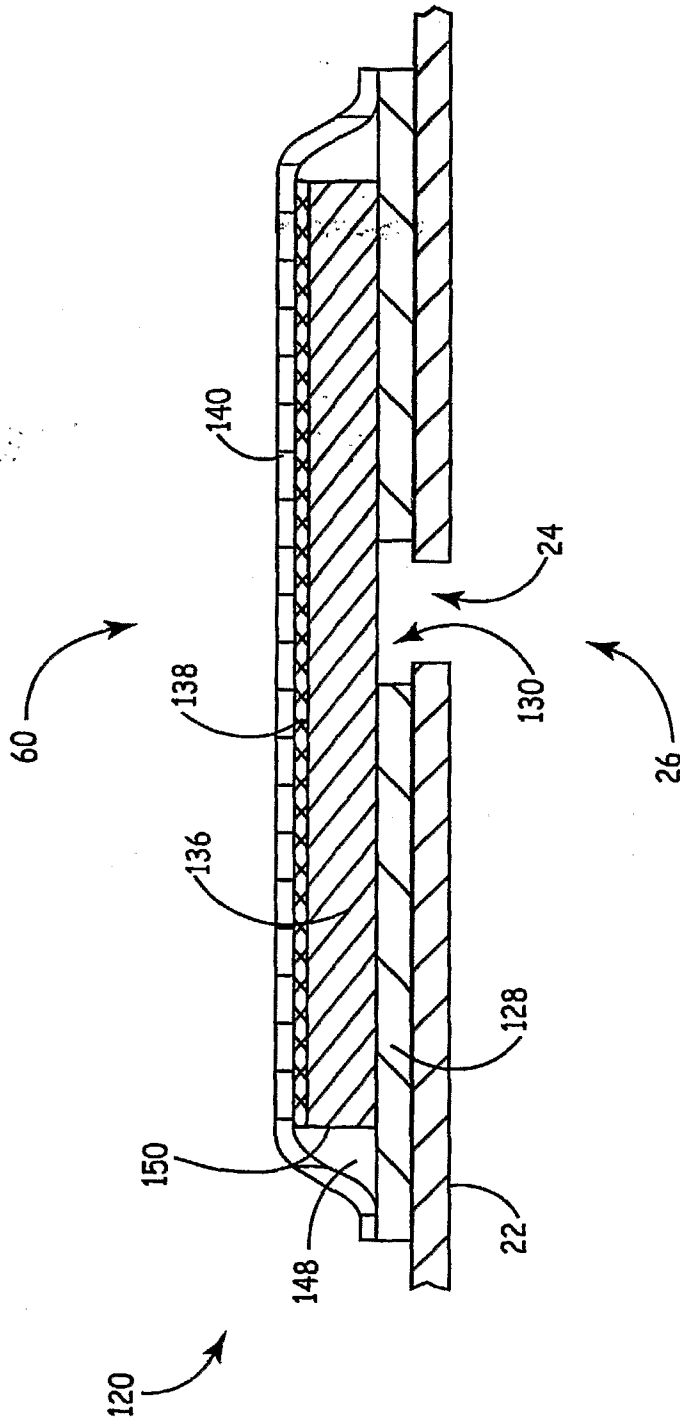


FIG. 5

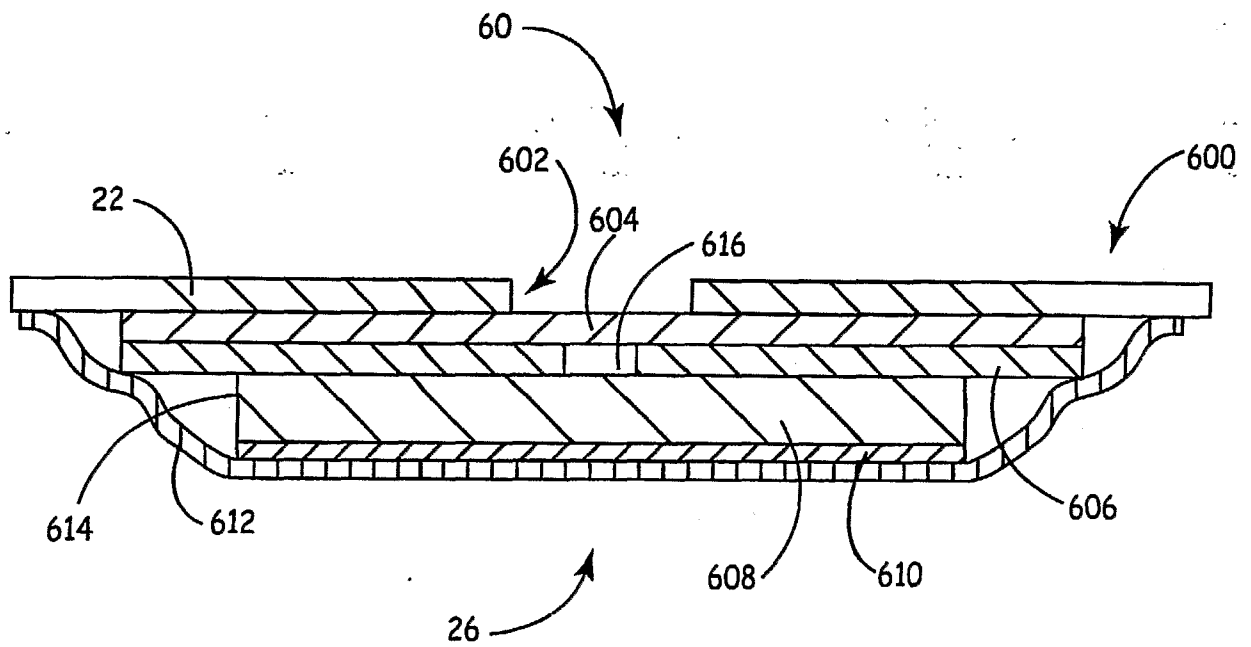


FIG. 6

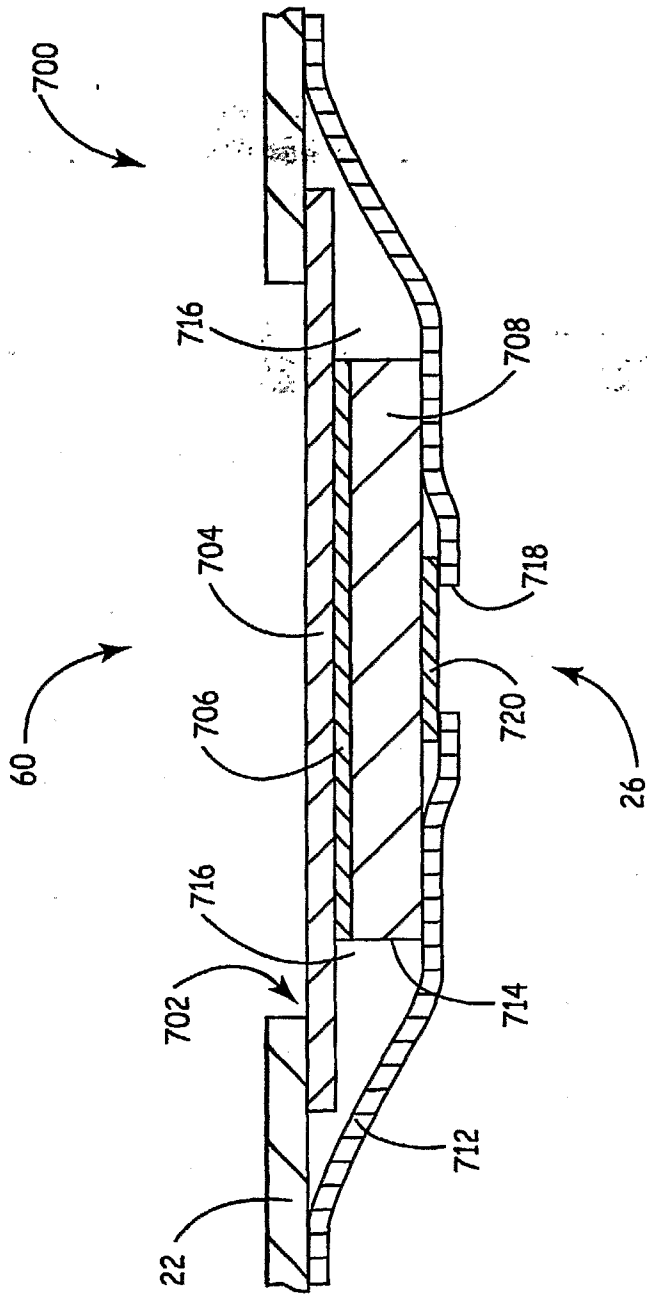


FIG. 7

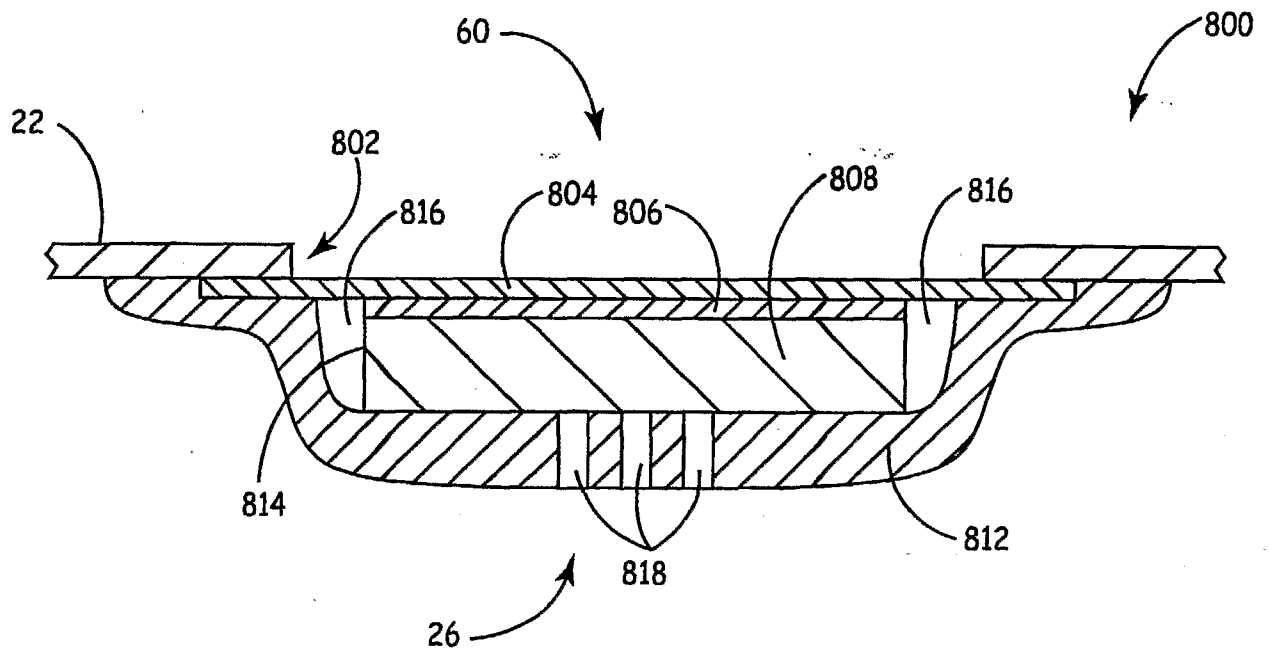


FIG. 8

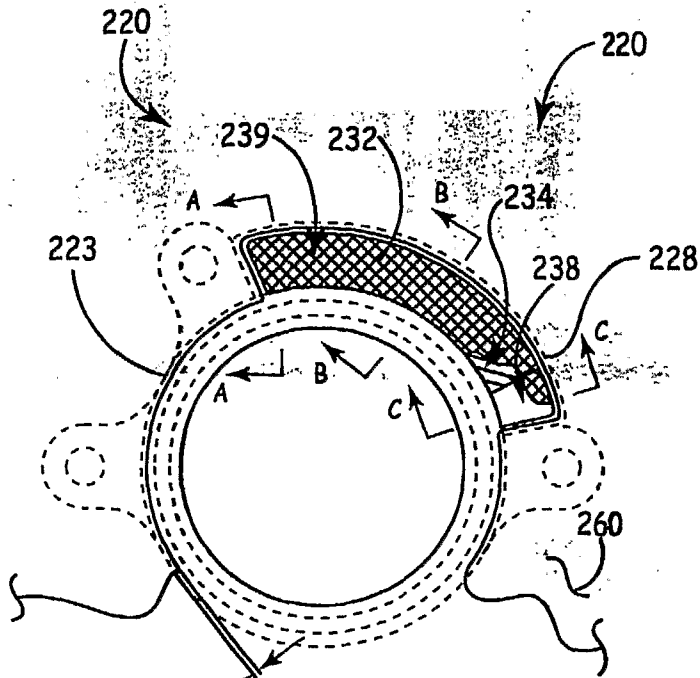


FIG. 9

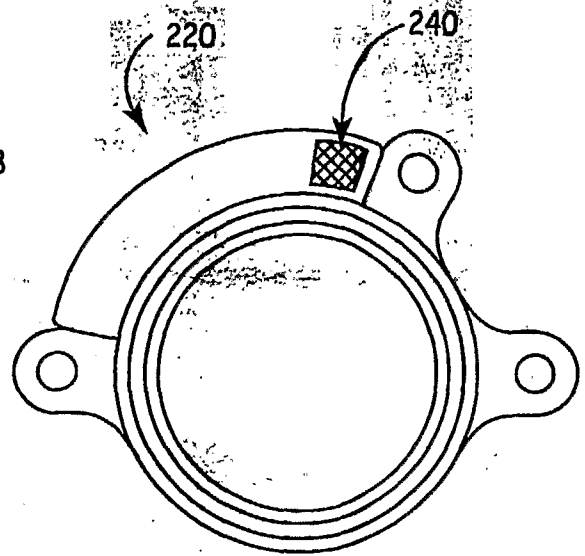
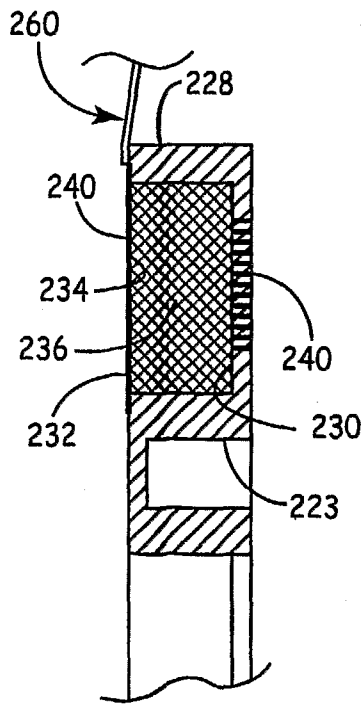
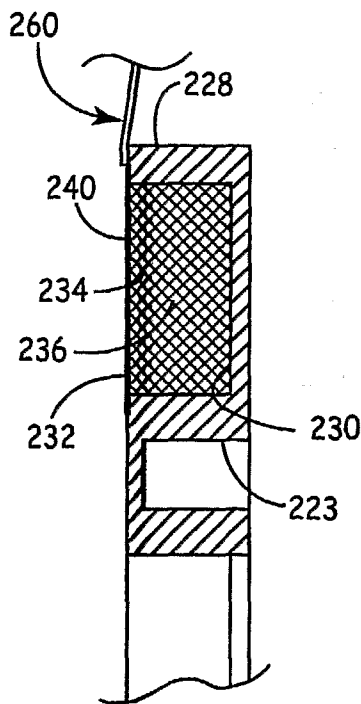


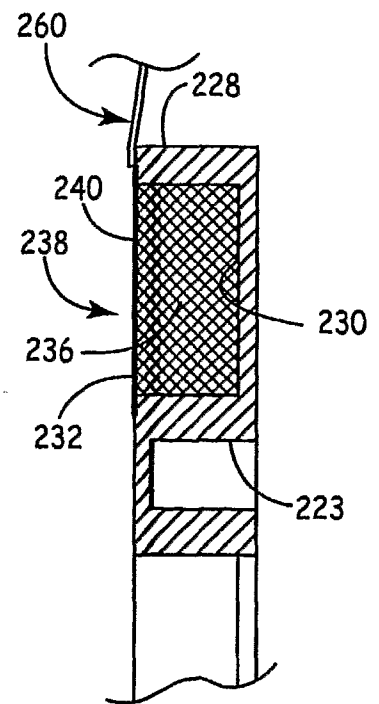
FIG. 10



SECTION A-A
FIG. 11



SECTION B-B
FIG. 12



SECTION C-C
FIG. 13

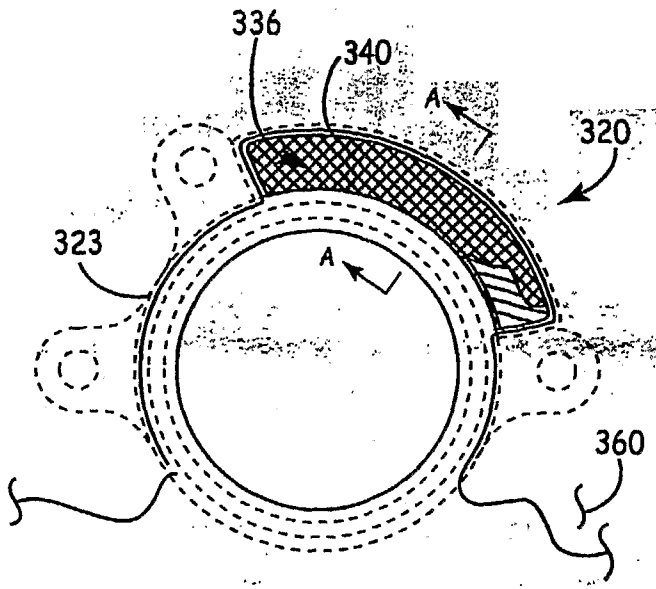


FIG. 14

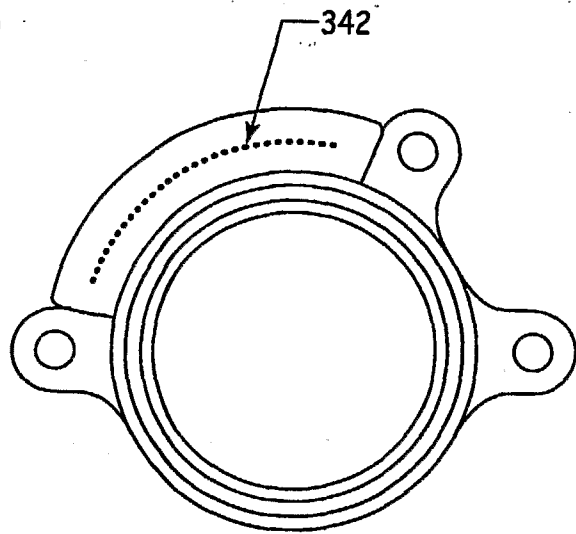
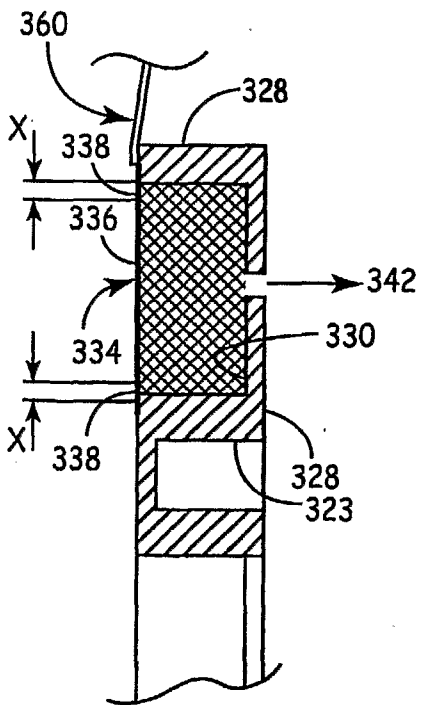


FIG. 15



SECTION A-A

FIG. 16

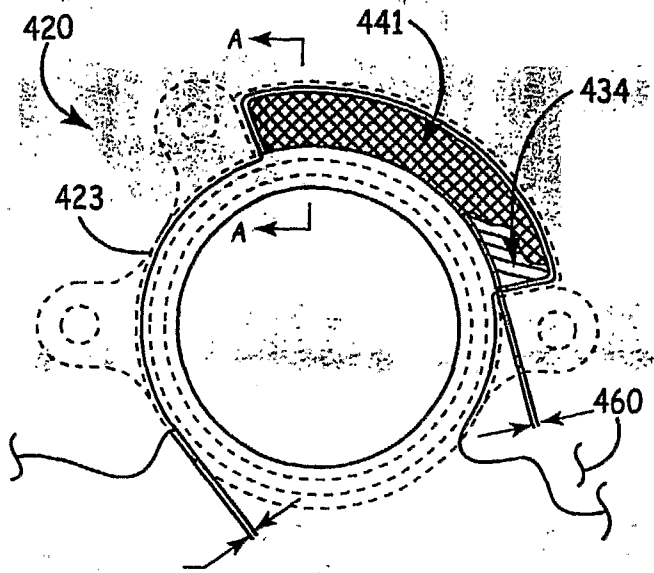


FIG. 17

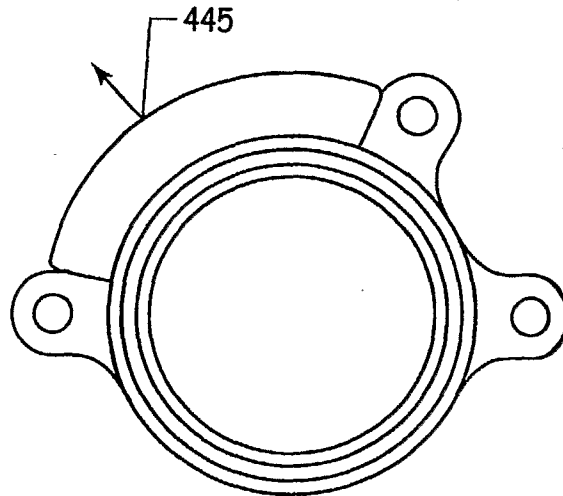
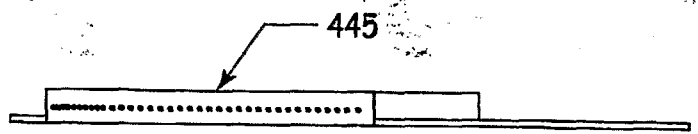
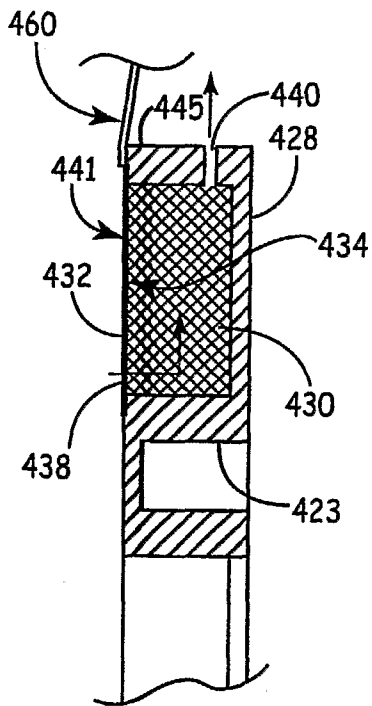


FIG. 18



SECTION A-A

FIG. 19

