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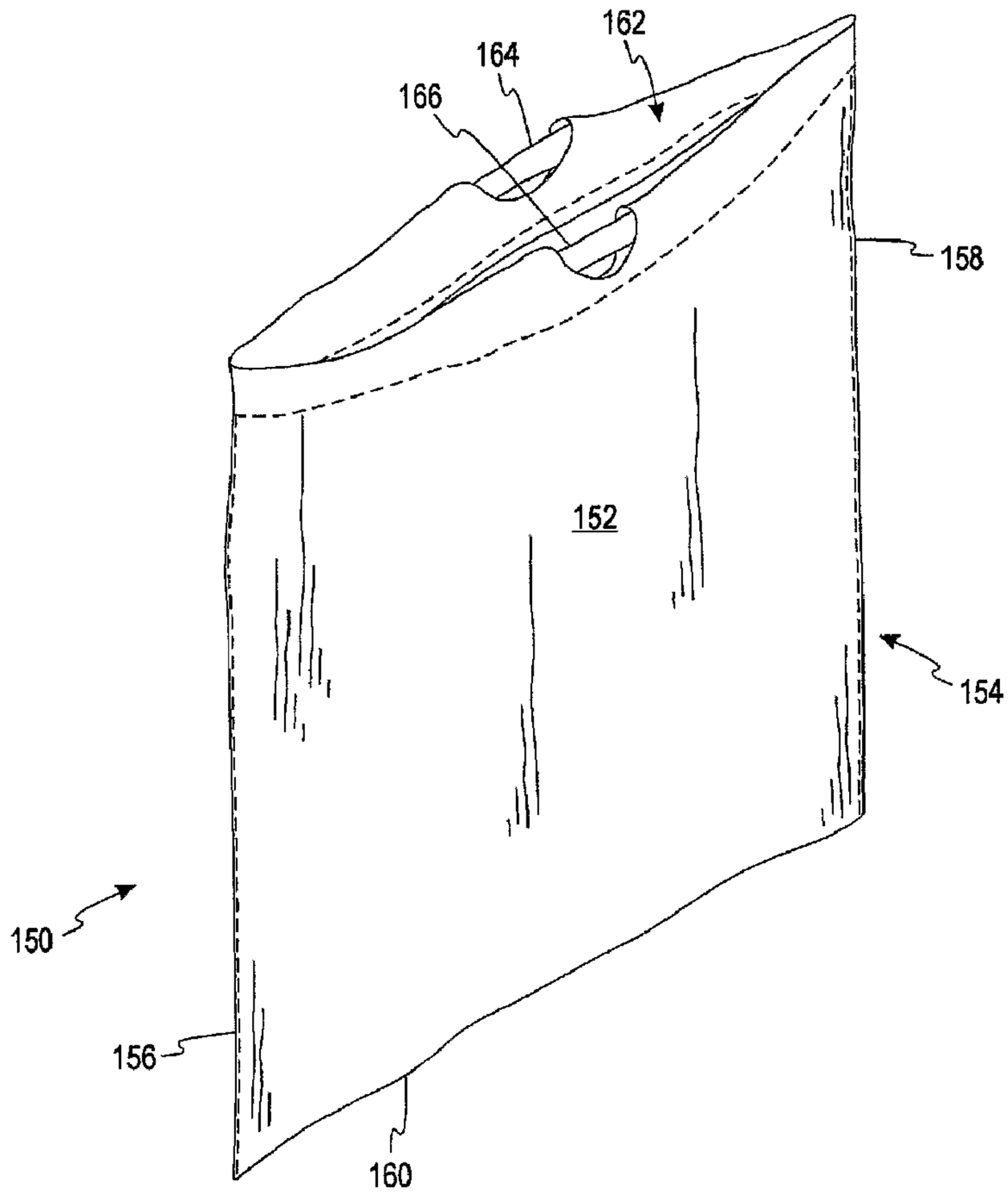
(54) Title: THERMOPLASTIC BAGS OR LINERS AND METHODS OF MAKING THE SAME



(57) Abrégé/Abstract:
A bag or liner (10) adapted to collect items comprises first and second thermoplastic body panels (112, 114), and at least one polymeric structure (218). The first and second body panels are joined along a pair of opposing sides and a bottom (20) bridging

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the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. The at least one structure is a patch, tape or pouch.

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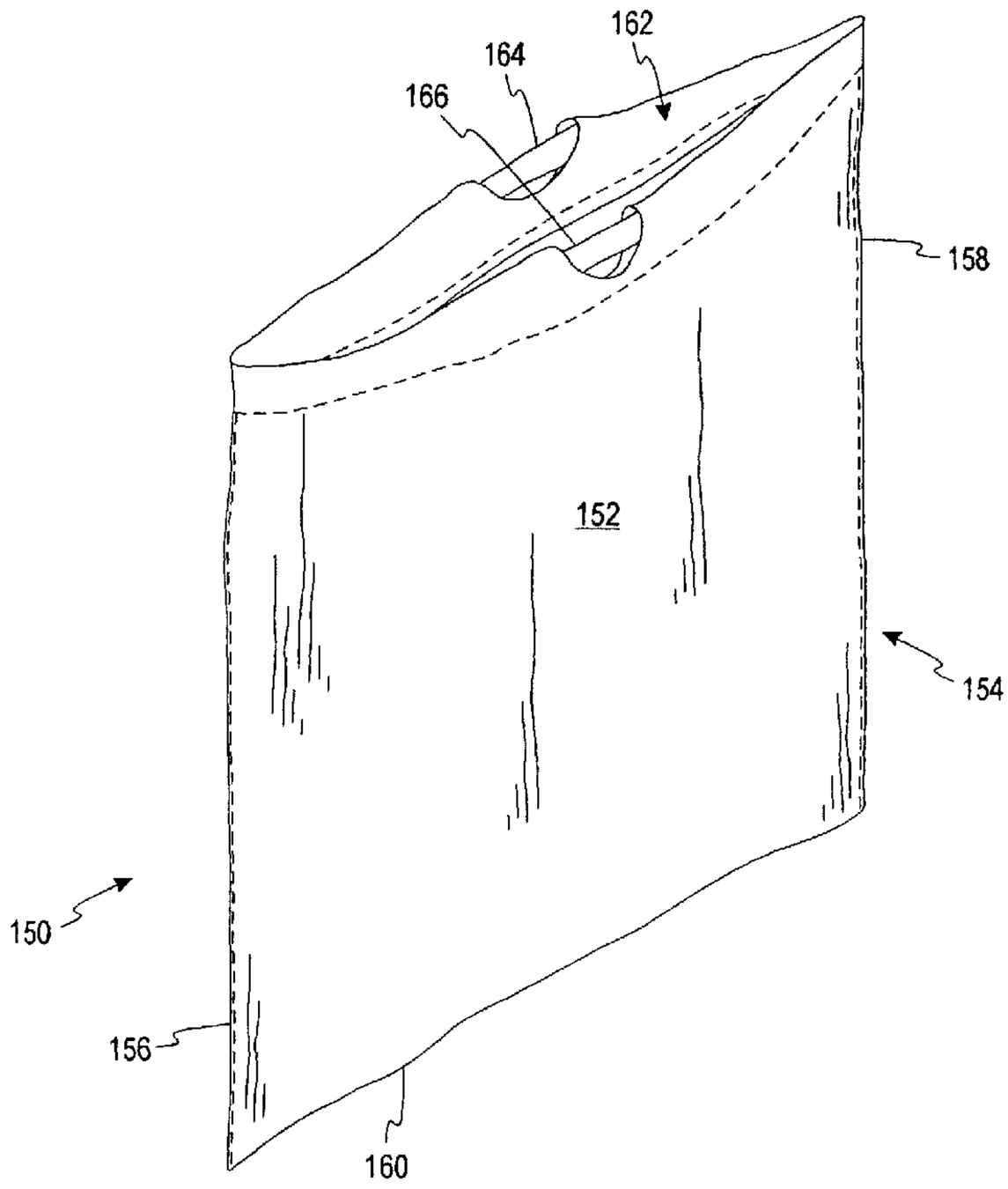
(54) Title: THERMOPLASTIC BAGS OR LINERS AND METHODS OF MAKING THE SAME



(57) Abstract: A bag or liner (10) adapted to collect items comprises first and second thermoplastic body panels (112, 114), and at least one polymeric structure (218). The first and second body panels are joined along a pair of opposing sides and a bottom (20) bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. The at least one structure is a patch, tape or pouch.

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THERMOPLASTIC BAGS OR LINERS AND METHODS OF MAKING THE SAME

FIELD OF THE INVENTION

This invention is directed generally to thermoplastic films manufactured into articles such as bags or liners that collect items and, more specifically, articles such as waste bags or liners that include an attached polymeric structure therein that assists in masking and/or neutralizing odors from reaching a user.

BACKGROUND OF THE INVENTION

The use of thermoplastic bags or liners for a number of household and industrial uses has gained wide acceptance. Many of these bags are constructed from a simple structure having two layers of thermoplastic film which are joined along three sides and having a mouth opening formed along the fourth side. This basic structure has been adapted to a wide range of sizes and configurations that vary with the intended end use of the bag.

These bags or liners are often used to collect waste or garbage in a number of households. Such garbage bags or liners are often used to collect waste that can produce odors unpleasant to a user. To address this problem, manufacturers have combined a scented resin with one or more polymeric resins during the forming of a garbage bag. The scented resin is distributed throughout the garbage bag in relatively equal amounts. Such a garbage bag assists in masking and/or neutralizing at least some of the odors from reaching the user.

There are a number of disadvantages with such garbage bags including that the scent is not concentrated in an interior of the bag where the user is likely to encounter the unpleasant odors. Because the scent is not concentrated in the interior of the bag, several difficulties to the manufacturer may occur. First, to obtain a desired amount of scent in the interior of such garbage bags, too much scent may need to be added that results in an overpowering scent to a user. Second, to prevent overpowering scents to a user, the desired amount of scent may not be provided to the interior of the bag. In other words, the balance between the desired amount in the interior of the bag and avoiding an overpowering scent to a user may not be obtainable, or difficult to obtain. Additionally, the scented resin used in such garbage bags is likely more expensive than the other

polymeric resins used in forming the garbage bags. Thus, it is economically undesirable to distribute the scented resin in relatively equal amounts throughout the bag.

Therefore, there is a need for bags or liners that mask and/or neutralize odors from reaching the user without such disadvantages.

SUMMARY OF THE INVENTION

According to one embodiment, a bag or liner adapted to collect items comprises first and second thermoplastic body panels, and at least one polymeric structure. The first and second body panels are joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. The at least one polymeric structure is a patch, tape or pouch. The at least one structure comprises a first layer being a barrier layer and including an odor-masking and/or neutralizing agent. The first layer is attached to the bag or liner via attaching means such that the odor-masking and/or neutralizing agent is in communication with the interior space.

According to one method of making a bag or liner adapted to collect items, first and second thermoplastic body panels are provided that have been joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. At least one structure being a patch, tape or pouch is provided. The at least one structure comprises a first layer being a barrier layer and including an odor-masking and/or neutralizing agent. The first layer is attached to the bag or liner via an adhesive or a heat seal such that the odor-masking and/or neutralizing agent is in communication with the interior space.

According to another embodiment, a bag or liner adapted to collect items comprises first and second thermoplastic body panels, and at least one polymeric structure. The first and second body panels are joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. The at least one structure is a patch, tape or pouch. The at least one structure comprises a first layer being a barrier layer, and a second polymeric layer comprising an odor-masking and/or neutralizing agent. The second polymeric layer is adjacent to the first layer. The at least one structure is attached to the bag or liner via attaching means such that the odor-masking and/or neutralizing agent is in communication with the interior space.

According to another method of making a bag or liner adapted to collect items, first and second thermoplastic body panels are provided that have been joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. At least one structure being a patch, tape or pouch is provided. The at least one structure comprises a first layer being a barrier layer, and a second polymeric layer comprising an odor-masking and/or neutralizing agent. The second polymeric layer is adjacent to the first layer. The first layer is attached to the bag or liner via an adhesive or a heat seal such that the odor-masking and/or neutralizing agent is in communication with the interior space.

According to a further embodiment, a bag or liner adapted to collect items comprises first and second thermoplastic body panels, and at least one polymeric structure. The first and second body panels are joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. The at least one polymeric structure is a patch, tape or pouch. The at least one polymeric structure comprises a first polymeric layer being a barrier layer, a second polymeric layer comprising an odor-masking and/or neutralizing agent, and a third polymeric layer being a permeable layer. The second polymeric layer is located between the first polymeric layer and the third polymeric layer. The at least one polymeric structure is attached to the bag or liner via an adhesive or a heat seal such that the odor-masking and/or neutralizing agent is in communication with the interior space.

According to a further method of making a bag or liner adapted to collect items, first and second thermoplastic body panels are provided that have been joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. At least one polymeric structure being a patch, tape or pouch is provided. The at least one polymeric structure comprises a first polymeric layer being a barrier layer, a second polymeric layer comprising an odor-masking and/or neutralizing agent, and a third polymeric layer being a permeable layer. The second polymeric layer is located between the first polymeric layer and the third polymeric layer. The first polymeric layer is

attached to the bag or liner via an adhesive or a heat seal such that the odor-masking and/or neutralizing agent is in communication with the interior space.

According to yet another embodiment, a bag or liner adapted to collect items comprises first and second thermoplastic body panels, and first and second polymeric-structure portions. The first and second body panels are joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. The first polymeric-structure portion comprises two layers and is a patch, tape or pouch. The first polymeric-structure portion comprises a first polymeric layer being a barrier layer, and a second polymeric layer being a permeable layer and including an odor-masking and/or neutralizing agent. The second polymeric layer is adjacent to the first polymeric layer. The first polymeric layer is attached to the bag or liner via an adhesive or heat seal such that the odor-masking and/or neutralizing agent is in communication with the interior space.

The second polymeric-structure portion comprises two layers and is a patch, tape or pouch. The second polymeric-structure portion comprises a third polymeric layer being a barrier layer, and a fourth polymeric layer being a permeable layer and including an odor-masking and/or neutralizing agent. The fourth polymeric layer is adjacent to the third polymeric layer. The second polymeric layer is heat sealed at selected locations to the fourth polymeric layer such that the respective odor-masking is adapted to enter the interior space of the bag or liner therebetween.

According to yet a further embodiment, a bag or liner adapted to collect items comprises first and second thermoplastic body panels, and first and second polymeric-structure portions. The first and second body panels are joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. The first polymeric-structure portion comprises three layers and is a patch, tape or pouch. The first polymeric-structure portion comprises a first polymeric layer being a barrier layer, a second polymeric layer comprising an odor-masking and/or neutralizing agent, and a third polymeric layer being a permeable layer. The second polymeric layer is located between the first polymeric layer and the third polymeric layer. The first polymeric layer is

attached to the bag or liner via an adhesive or heat seal such that the odor-masking and/or neutralizing agent is in communication with the interior space.

The second polymeric-structure portion comprises three layers and is a patch, tape or pouch. The second polymeric-structure portion comprises a fourth polymeric layer being a barrier layer, a fifth polymeric layer comprising an odor-masking and/or neutralizing agent, and a sixth polymeric layer being a permeable layer. The fifth polymeric layer is located between the fourth polymeric layer and the sixth polymeric layer. The third polymeric layer is heat sealed at selected locations to the sixth polymeric layer such that the respective odor-masking and/or neutralizing agent of the second polymeric layer and the fifth polymeric layer is adapted to enter the interior space of the bag or liner between the third polymeric layer and the sixth polymeric layer.

According to one method of providing a patch, tape or pouch to be attached to a surface of a bag or liner, a bag or liner is provided with an interior space formed by first and second thermoplastic body panels. A blown film is extruded that comprises two layers. The first polymeric layer is a barrier layer and the second polymeric layer comprises an odor-masking and/or neutralizing agent. The first polymeric layer and the second polymeric layer are adjacent to each other. The blown film is extruded through a die to form a tube. The blown film tube is inflated and then collapsed so as to form a four layer structure that comprises the first polymeric layer, the second polymeric layer, a third polymeric layer being a barrier layer, and a fourth polymeric layer comprising an odor-masking and/or neutralizing agent. Selected portions of the second and fourth polymeric layers of the structure are weakly heat sealed after collapsing the blown film tube. The film is severed at a selected width and length to form a patch, tape or pouch. The first polymeric layer is attached to the first body panel such that the odor-masking and/or neutralizing agent of the second polymeric layer is in communication with the interior space upon opening of the bag or liner. The third polymeric layer is attached to the second body panel such that the odor-masking and/or neutralizing agent of the fourth polymeric layer is in communication with the interior space upon opening of the bag or liner.

According to another method of providing a patch, tape or pouch to be attached to a surface of a bag or liner, a bag or liner is provided with an interior space formed by first and second thermoplastic body panels. A blown film is extruded that comprises a

first polymeric layer being a barrier layer, a second polymeric layer comprising an odor-masking and/or neutralizing agent, and a third polymeric layer being a permeable layer. The second polymeric layer is located between the first polymeric layer and the third polymeric layer. The blown film is extruded through a die to form a tube and the blown film tube is inflated. The blown film tube is collapsed so as to form a six layer structure that comprises the first polymeric layer, the second polymeric layer, the third polymeric layer, a fourth polymeric layer being a barrier layer, a fifth polymeric layer comprising an odor-masking and/or neutralizing agent, and a sixth polymeric layer being a permeable layer. Selected portions of the third and sixth polymeric layers of the structure are weakly heat sealed after collapsing the blown film tube. The film is severed at a selected width and length to form a patch, tape or pouch. The first polymeric layer is attached to the first body panel such that the odor-masking and/or neutralizing agent of the second polymeric layer is in communication with the interior space upon opening of the bag or liner. The sixth polymeric layer is attached to the second body panel such that the odor-masking and/or neutralizing agent of the fifth polymeric layer is in communication with the interior space upon opening of the bag or liner.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is an elevational view of a completed bag according to one embodiment;

FIG. 2a is an elevational view of a completed bag according to another embodiment;

FIG. 2b is a perspective view of a completed bag according to another embodiment;

FIG. 3a is a partial cross-sectional view of one side of a bag comprising a polymeric structure with one layer according to one embodiment of the present invention;

FIG. 3b is a partial cross-sectional view of one side of bag comprising a polymeric structure with two layers according to one embodiment of the present invention;

FIG. 3c is a partial cross-sectional view of one side of bag comprising a polymeric structure with three layers according to one embodiment of the present invention;

FIG. 3d is a partial cross-sectional view of one side of bag comprising a polymeric structure with two layers according to another embodiment of the present invention;

FIG. 4 is a partial cross-sectional view of one side of a bag according to another embodiment of the present invention;

FIG. 5 is a partial cross-sectional view of one side of a bag according to a further embodiment of the present invention;

FIG. 6 is a partial cross-sectional view of one side of a bag according to yet another embodiment of the present invention;

FIG. 7 is a partial cross-sectional view of one side of a bag according to yet a further embodiment of the present invention;

FIG. 8 is a partial cross-sectional view of one side of a bag according to another embodiment of the present invention;

FIG. 9a is a partial cross-sectional view of one side of a bag that includes a polymeric structure with four layers according to one embodiment of the present invention;

FIG. 9b is a partial cross-sectional view of one side of a bag that includes a polymeric structure with six layers according to one embodiment of the present invention;

FIG. 10a is a partial cross-section view of two sides of a bag that includes two polymeric structures that each comprise two layers according to one embodiment of the present invention;

FIG. 10b is a partial cross-section view of two sides of a bag that includes two polymeric structures that each comprise two layers according to another embodiment of the present invention;

FIG. 10c is a partial cross-section view of two sides of a bag that includes two polymeric structures that each comprise three layers according to one embodiment of the present invention;

FIG. 11a is an end view of a blown film tube according to one embodiment;

FIG. 11b is an end view of the collapsed blown film tube of FIG. 11a;

FIG. 11c is an end view of a blown film tube according to another embodiment;

FIG. 11d is an end view of the collapsed blown film tube of FIG. 11c;

FIG. 11e is an end view of a blown film tube according to a further embodiment; and

FIG 11f is an end view of the collapsed blown film tube of FIG. 11e.

While the invention is susceptible to various modifications and alternative forms, specific embodiments thereof have been shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that it is not intended to limit the invention to the particular forms disclosed but, on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

The present invention is used in combination with articles such as bags and liners. Some examples of bags or liners include waste bags, food bags, laundry bags, storage bags or disposable medical bags. To mask and/or neutralize unpleasant odors from reaching a user, the articles include a structure such as a patch, tape or pouch that is in communication with the interior portion of the article. One example of a structure that masks and/or neutralizes odor is a scented structure. The structure that masks and/or neutralizes odors is generally located in a top half portion of the article because of the ease of manufacture and visibility of the structure to the user or customer.

Bags/Liners

The present invention may be used with a variety of articles such as bags or liners and a few non-limiting examples of bags are shown in FIGs. 1 and 2. Referring initially to FIG. 1, a thermoplastic bag 10 is depicted. The bag 10 is formed from a single flexible thermoplastic sheet folded upon itself and comprises first and second opposing body panels 12, 14. Body panels 12, 14 are fixedly connected to each other along a pair of sides 16, 18 and a bottom 20 which extends between the pair of sides 16, 18. The bag includes an open mouth 22 opposite of the bottom 20. The joined body panels 12, 14 form an interior space for collecting items.

Alternatively, the bag 10 may be formed from separate thermoplastic sheets where the first and second opposing body panels are sealed after being initially separated so as to form the pair of sides and the bottom (*i.e.*, sealed on three sides). Alternatively, the bag 10 may be formed from a single flexible thermoplastic sheet having a side fold, a seal on the side opposite the side fold, and an end seal.

The bags or liners may include a tie feature that assists in (a) closing the bag or liner securely, (b) forming a handle for carrying the bag or liner to be disposed and/or (c) facilitating the opening of the bag or the liner. For example, a bag 110 of FIG. 2a is

depicted in the layflat condition and includes one type of tie feature. The term layflat condition is defined as the bag in a collapsed condition before it has been opened for filling.

The bag 110 of FIG. 2a is formed from a single flexible thermoplastic sheet folded upon itself and comprises a first opposing body panel 112 and a second opposing body panel 114. The first body panel 112 does not overlap with the shape of the leading edge of the bag mouth contained in the second body panel 114. Consequently, at least some portion of the first body panel 112 does not overlap the second body panel 114 and at least some portion of the second body panel 114 does not overlap the first body panel 112. Body panels 112, 114 are fixedly connected to each other along a pair of sides 116, 118 and a bottom 120 which extends between the pair of sides 116, 118.

Alternatively, the bag 110 may be formed from separate thermoplastic sheets wherein the first and second opposing body panels are sealed after being initially separated so as to form the pair of sides and the bottom (*i.e.*, sealed on three sides). Alternatively, the bag 110 may be formed from a single flexible thermoplastic sheet having a side fold, a seal on the side opposite the side fold, and an end seal.

The bag 110 includes integral tie members 122, 124 that are formed by the non-overlapping portions described above. More details about the bag 110 and methods of making the same can be obtained from U.S. Patent 5,611,627. Other examples of bags having tie features include U.S. Patent Nos. 4,890,736, 5,041,317, 5,246,110, 5,683,340 and 5,709,641. The bag or liner may further include a recloseable fastener or zipper to assist a user in opening and closing thereof.

Alternatively, the bags or liners may include a separate closure means in the form of a plastic or metal tie device. Such devices are well known and require that the neck of the bag be bunched together by the user. For example, referring to FIG. 2b, a bag 150 is depicted that is formed from at least one flexible thermoplastic sheet. The bag 150 includes a first opposing body panel 152 and a second opposing body panel 154. Body panels 152, 154 are fixedly connected to each other along a pair of sides 156, 158 and a bottom 160 which extends between the pair of sides 156, 158. A mouth portion 162 of the bag 150 is located opposite of the bottom 160 and includes continuous strips 164, 166 located in a hem. Examples of such a bag are depicted in U.S. Patent Nos. 4,558,463 and

4,624,654. A further example is depicted in U.S. Patent No. 6,059,458, which discloses a bag with a drawtape within a hem.

Odor-Masking and/or Neutralizing Structure

As discussed above, the article, such as bags or liners, includes a structure that is in communication with the interior portion of the article and is adapted to mask and/or neutralize odors. One example of a structure that masks and/or neutralizes odor is a scented structure. The structure that masks and/or neutralizes odor is generally located in a top half portion of the article because of the ease of manufacture and visibility of the structure to the customer. It is generally not desirable to locate the structure at the topmost portion of the bag because if the bag is used as a liner, the topmost portion of the bag may extend over an edge of the receptacle resulting in the structure being in a less desirable location.

The odor-masking and/or neutralizing structure may be in the form of a patch, tape and/or pouch. The selection of a patch, tape or pouch is often dependant on the material being used. For example, a powder (*e.g.*, minerals containing chemistry) is often placed in an air-permeable pouch because it is often difficult to embed powders in a patch. One example of a powder that may be used is baking soda that absorbs odor. A patch or tape may be used with a scented odor or fragrance because of the ability of the odor or fragrance to embed therein. Tape generally includes an adhesive, a patch-like component and a release system such as a scented structure.

A scented patch, tape or pouch may be formed by one or more scented aromas. For example, some non-limiting examples of aromas include citronella, pine, flowery, citrus, limonene and substituted esters such as METAZENE®.

The patch, tape or pouch that masks and/or neutralizes odor may be made of polymeric materials including thermoplastic materials. It is contemplated that the patch, tape or pouch may be made of polyolefinic materials such as polyethylenes, polypropylenes, polystyrenes, and combinations thereof. Non-limiting examples of polyethylene include high density polyethylene, low density polyethylene, linear low density polyethylene, and combinations thereof. It is desirable to have a patch, tape or pouch that comprises polyethylene because of reasons such as its recyclability. Another example of a material that may be used in forming the patch, tape or pouch is ethyl methyl

acrylate (EMA). The patch, tape or pouch may be formed of a porous non-woven material (*e.g.*, gauze) that allows an active ingredient such as a desired scent to be released.

It is contemplated that additional layers may be added to the patch, tape or pouch. For example, a barrier layer may be added that comprises a polymeric material such as an ethylene vinyl alcohol (EVOH), polyvinylidene chloride layer (PVDC), polyester, nylon, cyclic olefin copolymers or combinations thereof. It is also contemplated that other barrier materials such as foils and metallized polymers such as metallized oriented polypropylenes (OPP) may be used.

An example of a cyclic olefin copolymer that may be used in forming the barrier layer is TOPAS® 8007. Useful cyclic olefin copolymers are believed to be available from several companies. For example, Ticona, a business of Celanese AG, in Summit N.J. has cyclic olefin copolymers available. Other companies that are believed to have cyclic olefin copolymers available include Nippon Zeon (Japan), Mitsui Chemical (Japan) and JSR (Japan), formerly know as Japan Synthetic Rubber. Ticona, a business of Celanese AG, has commercially available cyclic olefin copolymers (COCs) under the designation TOPAS®. These cyclic olefin copolymers are believed to be prepared with feedstocks of norbornene and ethylene and the use of a metallocene catalyst. There are believed to be at least four grades of TOPAS® resins available (TOPAS® 8007, TOPAS® 6013, TOPAS® 6015 and TOPAS® 6017). The four grades of TOPAS® resins available have glass transition temperatures, T_g, of 80, 140, 160 and 180°C, respectively. The corresponding norbornene levels of the four grades of TOPAS® resins are 35, 48, 55 and 59 mole %.

The barrier layer assists in keeping the odor-masking and/or neutralizing material in communication with the interior of the bag or liner and, thus, assists in preventing or inhibiting the odor-masking and/or neutralizing material from permeating through the body panel. In other words, the barrier layer may be a patch, tape or pouch that has an odor-masking and/or neutralizing agent that is located on an inner surface of the barrier layer as shown in, for example, FIG. 3a. In FIG. 3a, one side of a bag 210 is depicted with a body panel 212 that includes a patch or tape 214, and a second body panel (not shown in FIG. 3a). The odor-masking and/or neutralizing agent of the patch or tape 214 is in communication with the interior space, while one surface of the patch or tape 214 is

attached to a surface 212a of the body panel 212 via an adhesive or a heat seal. It is contemplated that other attachment methods may be used. For example, the patch, tape or pouch may be attached to at least one surface of the body panels using mechanical methods such as clips or staples.

One example depicted in FIG. 3b includes a bag 230 comprising a first body panel 212, a second body panel (not shown in FIG. 3b) and a structure 234. The structure 234 comprises a first layer 216 that is a barrier layer and a second polymeric layer 218 that includes an odor-masking and/or neutralizing agent. The first layer 216 may be a polymeric barrier layer using the materials described previously in forming a barrier layer. One example of a polymer that may be used in the second polymeric layer 218 is a polyolefin such as a linear low density polyethylene (LLDPE). An outer surface of the first layer 216 of FIG. 3b is attached to an inner surface 212a of the first body panel 212. The second polymeric layer 218 is directly adjacent to the first layer 216 so that the odor-masking and/or neutralizing agent is in communication with the interior space. Depending on the materials that form the first and second layers 216, 218, it may not be necessary to adhesively attach the layers together. Rather, for example, the first and second layers may be co-extruded together if the materials for forming the first and second layers are compatible.

It is contemplated that the structure 234 may have a release agent (*e.g.*, a slip additive) that assists in preventing or inhibiting the structure from sticking to adhesive, if any, that has been applied thereto. Adhesives may be used in one embodiment to attach the structure to the body panel(s). The release agent, if used, is desirably located on a surface of the tape, patch or pouch farthest from the surface that attaches to the body panel. Sticking can occur, for example, when the polymeric structure is wound into a roll. Examples of a release agent include siloxane and glycerol monostearate, although it is contemplated that other release agents may be used.

It is also contemplated that information may be printed on the structure 234 such as on the barrier layer or the permeable layer. It is contemplated that the printing may occur on different locations of the structures. For enhanced visibility and readability of the printing, it may be desirable to print on the surface of the structure that is closest to the body panel when the structure is located in the interior of the bag or liner. For example, in FIG. 3b, the printing would be desirably located between the body panel 212

and the first layer 216. If adhesive is used to attach the first layer 216 of FIG. 3b to the surface 212a, then the printing may be located between the adhesive and the first layer 216. It is contemplated that other attachment methods may be used such as a heat seal or mechanical methods.

Other layers are contemplated such a scent-enhancing layer. A scent-enhancing layer may enhance delivery of a scent with increasing humidity. Increasing humidity often results in a corresponding increase in bacteria growth that results in increased odors. One example of a scent-enhancing layer is polyvinyl alcohol (PVOH).

The odor-masking and/or neutralizing structure may include additional material to enhance scent concentration in the interior portion of the bag. For example, the patch, tape or pouch may include perlite (a naturally occurring silicous rock) to increase the scent concentration. Perlite is desirable to use because of reasons such as its ability to retain scent, stability and surface area. Additional non-limiting examples of material that may enhance the scent include microspheres, talc, silicon, silicate, vermiculite, diatomaceous earth, or combinations thereof including the previously mentioned PVOH and perlite. One example of a silicate that may be used is an aluminum silicate. Thus, one layer of the structure may include a fragrance (*e.g.*, a liquid fragrance), a scent-enhancing mineral, and a polymeric resin (*e.g.*, LLDPE).

Referring to FIG. 3c, a bag 250 comprises a first body panel 212, a second body panel (not shown in FIG. 3c), and a structure 254 in the form of a patch or tape. It is contemplated that the structure may be in the form of a pouch. The structure 254 comprises a first layer 216 that is a barrier layer, and a second polymeric layer 218 that includes an odor-masking and/or neutralizing agent, a third polymeric layer 220 that is a permeable layer. The first layer 216, as discussed above, may be a polymeric layer. The second polymeric layer 218 that comprises the odor-masking and/or neutralizing agent is located between the first and third layers 216, 220. One example of a polymer that may be used in the second polymeric layer 218 is a polyolefin, such as a linear low density polyethylene (LLDPE). The odor-masking and/or neutralizing agent is in communication with the interior space of the bag via the third polymeric layer 220 that is permeable. Thus, the third polymeric layer 220 controls the permeability and must be permeable to the extent that the odor-masking and/or neutralizing agent can enter the interior of the bag or liner therethrough.

It is contemplated that the third polymeric layer 220 may comprise a cyclic olefin copolymer. The third polymer layer may comprise from about 10 to about 50 wt.% or, more specifically, from about 20 to about 40 wt.% cyclic olefin copolymer to assist in reducing curling of the polymeric structure. While not being bound by theory, curling tends to be caused when the materials for forming the polymeric-structure layers are not as compatible with each other (*i.e.*, the layers tend to have different shrink rates). For example, the barrier layer may comprise a more crystalline material that does not shrink much, if any, over time as compared to the permeable layer that may comprise a material, such as polyethylene, that tends to shrink over time. The disadvantage of having the structure curl is that the edges tend to curl in a transverse direction upon itself leading to processing problems. By using a cyclic olefin copolymer in the third polymeric layer, the first layer and the third polymeric layer become more compatible and, thus, reduce or inhibit curling of the polymeric structure. The addition of a cyclic olefin copolymer to the third polymeric layer 220 also slows the permeation of the odor-masking and/or neutralizing scent into the interior of the bag.

As discussed above, it is contemplated that the structure 254 of FIG. 3c may have a release agent (*e.g.*, a slip additive) that assists in preventing or inhibiting the polymeric structure from sticking to itself. It is also contemplated that information may be printed on the structure 254. The first layer 216 may be attached to the surface of the body panel(s) via an adhesive, heat seal or other methods.

Referring to FIG. 3d, a bag 270 comprises a first body panel 212, a second body panel (not shown in FIG. 3d), and a structure 274 in the form of a patch or tape. It is contemplated that the structure may be a pouch. The structure 274 comprises a first layer 216 being a barrier layer, and a second polymeric layer 219 being a permeable layer and including an odor-masking and/or neutralizing agent. The odor-masking and/or neutralizing agent must be able to communicate with the interior space of the bag. The first layer 216 may be attached to the body panel 212 via an adhesive, a heat seal or other methods.

The article, such as a bag or liner, may include more than one structure that masks and/or neutralizes odor therein. For example, the bag or liner may include two or three structures that mask and/or neutralize odor.

A patch, tape or pouch (*e.g.*, a scented patch, tape or pouch) may vary in size and is dependent on factors such as the desired amount of scent, the particular scent being used, the number of patches, tapes or pouches being used in the bag or liner, and the size of the bag or liner. The dimensions of the patch, tape or pouch are generally from about 1/2 inch or 1 inch to about 12 inches. Non-limiting examples of patch, tape or pouch dimensions include 1/2 inch x 1 inch, 1/2 inch x 2 inches, 1 inch x 6 inches, 2 x 4 inches, and 4 x 12 inches. The thicknesses of the patches, tapes or pouches may vary in the present invention but are generally from about 2 to about 10 mils and, more specifically, from about 3 to about 5 mils.

According to another embodiment, the odor-masking and/or neutralizing structure of the article is delivered in a non-woven matrix. The non-woven matrix may be impregnated after the non-woven matrix has been formed. The impregnation of the non-woven matrix may be accomplished by an odor-masking and/or neutralizing coating. Alternatively, the non-woven matrix may be initially formed with the odor-masking and/or neutralizing feature therein. According to a further embodiment, the odor-masking and/or neutralizing feature of the article may be micro-encapsulated in a patch, tape or pouch.

The odor-masking and/or neutralizing patch, tape or pouch (*e.g.*, a scent) in one embodiment is located in the interior of an article, such as the bag 10 or bag 110. For example in FIG. 3a, a partial cross-sectional view of one side of the bag 210 is depicted with the body panel 212 and the patch or tape 214. The patch or tape 214 is attached to an interior surface 212a of the body panel 212 in which the interior surface 212a forms an interior portion of the bag 210. Similarly, it is contemplated that a pouch may be used such that the pouch is attached to an interior surface of the body panel.

Alternatively, the patch, tape or pouch may be located on an exterior surface of an article or within layers of an article such that the odor-masking and/or neutralizing material is able to permeate into or communicate with the interior of the article. For example, the patch, tape or pouch may be located on an exterior surface of a bag in which a portion of the layer is removed such that the odor-masking and/or neutralizing material from the patch, tape or pouch can permeate into the interior of the bag. For example, referring to FIG. 4, a partial cross-sectional view of one side of a bag 310 is shown with a patch or tape 314 attached to an exterior surface 316a of body panel 316. The body panel 316 has at least one opening 318 that allows the odor-masking and/or neutralizing

material from the patch or tape 314 to permeate into the interior of the bag 310. The opening(s) 318 may be one large opening or a plurality of smaller openings that extends from and through the body panel 316 of the bag 310. The opening(s) 318 may be formed by processes known in the art including a perforation process.

In another example, FIG. 5 depicts a partial cross-sectional view of one side of a bag 410. The bag 410 comprises an exterior layer 412, a patch or tape 414, and an interior layer 416 with opening(s) 418. The patch or tape 414 is located between and attached to the exterior layer 412 and the interior layer 416. The opening(s) 418 allows the odor-masking and/or neutralizing material from the patch or tape 414 to be in communication with the interior of the bag 410. Similarly, it is contemplated that a pouch may be located between an exterior layer and interior layer instead of the patch or tape 414 shown in FIG. 5.

It is contemplated that a layer of an article may be permeable to the odor-masking and/or neutralizing material of the patch, tape or pouch such that the odor-masking and/or neutralizing material is in communication with the interior of the bag or line. FIG. 6 depicts such an example where a partial cross-sectional view of a bag 510 is shown. The bag 510 comprises a patch or tape 514 and a permeable layer 516. The permeable layer 516 allows the odor-masking and/or neutralizing material from the patch or tape 514 to enter the interior of the bag. The permeable layer 516 may be made of a suitable material that allows the odor-masking and/or neutralizing material to reach the interior of the bag in a relatively quick fashion. Examples of a permeable layer 516 include low density polyethylene and ethyl methyl acrylate (EMA). FIG. 7 depicts another embodiment with a partial cross-sectional view of one side of a bag 530 that includes an additional layer (exterior layer 512) as compared to the bag 510 of FIG. 6.

It is contemplated that additional layers may be added in forming the bags shown in FIGs. 3-7. For example, a thermoplastic barrier layer such as an ethylene vinyl alcohol (EVOH) or polyvinylidene chloride layer (PVDC) may be used in forming the body panels of the bag or liner. For example, an EVOH copolymer or a PVDC with a polyethylene carrier may be used in forming a barrier layer of the bag or liner. Such barrier layers assist in keeping the odor-masking and/or neutralizing material in communication with the interior of the bag or liner. Other layers are contemplated such a scent-enhancing layer. A scent-enhancing layer may enhance delivery of a scent with increasing humidity.

Increasing humidity often results in a corresponding increase in bacteria growth that results in increased odors. One example of a scent-enhancing layer is polyvinyl alcohol (PVOH).

The patch, tape or pouch, such as the patch or tape 214, may include a peelable cover. An example of such an embodiment is depicted in FIG. 8 where a partial cross-sectional view of one side of a bag 610 comprises a body panel 612, an odor-masking and/or neutralizing patch or tape 614, and a peelable cover 622. The peelable cover 622 covers at least a portion of the patch or tape 614 and may cover the entire patch or tape 614 that is exposed in the interior of the bag 610. The peelable cover 622 prevents or inhibits the odor-masking and/or neutralizing material from escaping the patch or tape 614 in its initial position shown in FIG. 8. The peelable cover may be attached to the layer 612 and/or the patch or tape 614. The peelable cover 622 is removed by a user from the patch or tape 614 to enhance or begin the release of the odor-masking and/or neutralizing material from the patch or tape 614. Typically, the removal of the peelable cover 622 by the user occurs when a bag or liner is placed into a receptacle. One example of the peelable cover 622 is a barrier layer such as EVOH or PVDC. It is contemplated that a peelable cover may be used with any of the structures that are in the form of a patch, tape or pouch.

According to one embodiment, an article is adapted to collect items and comprises a first thermoplastic body panel, a second thermoplastic body panel and at least one polymeric structure adapted to mask and/or neutralize unpleasant odors from reaching a user. The first and second body panels are joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items. The polymeric structure is attached to a surface of one or more the first and second body panels and is in communication with the interior space. The structure further includes a peelable cover in which the peelable cover is adapted to initially cover at least a portion of the polymeric structure.

According to another embodiment, a bag or liner may be used that includes two odor-masking and/or neutralizing structure portions. For example, referring to FIG. 9a, a bag 710 comprises a first thermoplastic body panel 712, a second thermoplastic body panel (not shown in FIG. 9a) a first structure portion 714a and a second structure portion 714b. As discussed above, the first and second body panels are joined along a pair of

opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items.

The first structure portion 714a comprises two layers and is a patch or tape. It is contemplated that the first and second structure portions may form a pouch. The first structure portion 714a comprises a first layer 716a being a barrier layer, and a second polymeric layer 719a being a permeable layer and including an odor-masking and/or neutralizing agent. The first layer 716a may be a polymeric layer. The second polymeric layer 719a is directly adjacent to the first layer 716a. The first layer 716a is shown in FIG. 9a as being attached to the first body panel 712 via an adhesive, heat seal or other methods.

Similarly, the second structure portion 714b comprises two layers and is a patch or tape. The second structure portion 714b comprises a third layer 716b being a barrier layer, and a fourth polymeric layer 719b being a permeable layer and including an odor-masking and/or neutralizing agent. The fourth polymeric layer 719b is directly adjacent to the third layer 716b. The third layer 716b may be a polymeric layer. The second polymeric layer 719a is heat sealed at selected locations to the fourth polymeric layer 719b such that the respective odor-masking and/or neutralizing agent permeates into the interior of the bag 710 via interior area 717.

The interior area 717 may be formed by having the first and second structure portions 714a, b curl with respect to each other. As shown in FIG. 9a, the interior area 717 is formed between the second and fourth polymeric layers 719a, b. By having at least a slight curl of the structure portions enables the odor and/or neutralizing agent to be in communication with the interior of the bag. It is desirable to have some curl in the embodiment depicted in FIG. 9a to assist in enabling the odor-masking and/or neutralizing agent to be in communication with the interior of the bag. As discussed above, the curling of the structure portions may be formed from using materials for forming the structure portions that are less compatible (*i.e.*, the shrink rates of the materials differ).

It is contemplated that additional layers may be used in forming the two structure portions. For example, in FIG. 9b, a bag 730 comprises a first thermoplastic body panel 712, a second thermoplastic body panel (not shown in FIG. 9b), a first structure portion 734a, and a second structure portion 734b. The first and second body panels are joined along a pair of opposing sides and a bottom bridging the sides so as to form an open

mouth. The joined first and second body panels form an interior space for collecting items.

The first structure portion 734a comprises three layers and is a patch or tape. It is contemplated that the first and second structure portions may form a pouch. The first structure portion 734a comprises a first layer 716a being a barrier layer, a second polymeric layer 718a comprising an odor-masking and/or neutralizing agent, and a third polymeric 720a being a permeable layer. The first layer 716a may be a polymeric layer. The second polymeric layer 718a is located between the first and third layers 716a, 720a. The first layer 716a is shown in FIG. 9b as being attached to the first body panel 712 via an adhesive or heat seal such that the odor-masking and/or neutralizing agent is in communication with the interior space. It is contemplated that other attaching methods may be used such as mechanical devices like clips or staples.

Similarly, the second structure portion 734b comprises three layers and is a patch or tape. The second thermoplastic structure portion 734b comprises a fourth layer 716b being a barrier layer, a fifth polymeric layer 718b comprising an odor-masking and/or neutralizing agent, and a sixth polymeric layer 720b being a permeable layer. The fourth layer 716b may be a polymeric layer. The fifth polymeric layer 718b is located between the fourth and sixth polymeric layers 716b, 720b. The third polymeric layer 720a is heat sealed at selected locations to the sixth polymeric layer 720b such that the respective odor-masking and/or neutralizing agent of the second polymeric layer 718a and the fifth polymeric layer 718b is adapted to enter the interior space of the bag or liner between the third polymeric layer 720a and the sixth polymeric layer 720b.

As discussed above, an interior area 727 may be formed by having the first and second structure portions 734a, b curl with respect to each other. As shown in FIG. 9b, the interior area 727 is formed between the third and sixth polymeric layers 720a, b.

According to another embodiment, a bag 810 is shown in FIG. 10a comprising a first thermoplastic body panel 812a, a second thermoplastic body panel 812b, a first structure 814a, and a second structure 814b. The first and second body panels 812a, 812b are joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth. The joined first and second body panels form an interior space for collecting items.

The first structure 814a comprises two layers and is a patch or tape. It is contemplated that the first and second structure portions may be in the form of a pouch. The first structure 814a comprises a first layer 816a being a barrier layer, and a second polymeric layer 819a being a permeable layer and including an odor-masking and/or neutralizing agent. The first layer 816a may be a polymeric layer. The second polymeric layer 819a is directly adjacent to the first layer 816a. The first layer 816a is shown in FIG. 10a as being attached to the first body panel 812a via an adhesive or heat seal. It is contemplated that other attachment methods may be used. To adhere to the first body panel 812a, the first layer 816a may include a coating that is not sticky or tacky at room temperature. Such a coating may become sticky, for example, at higher temperatures, or upon exposure to infrared radiation or heat.

Similarly, the second structure 814b comprises two layers and is a patch or tape. The second structure 814b comprises a third layer 816b being a barrier layer, and a fourth polymeric layer 819b being a permeable layer and including an odor-masking and/or neutralizing agent. The third layer 816b may be a polymeric layer. The fourth polymeric layer 819b is directly adjacent to the third layer 816b. The third layer 819b is shown in FIG. 10a as being attached to the second body panel 812b via an adhesive or heat seal. It is contemplated that other attachment methods may be used. To adhere to the second body panel 812b, the third layer 816b may include a coating that is not sticky or tacky at room temperature. Such a coating may become sticky, for example, at higher temperatures, or upon exposure to infrared radiation or heat.

It is contemplated that the first structure and the second structure may be formed of different compositions. For example, the first structure may include an odor-masking material, while the second structure may be an odor-absorbing material. In forming such an embodiment, the first and second structures may, for example, be formed by extruding two different patches, tapes or pouches.

Alternatively, the bag may be formed by other two or more layer structures. For example, as shown in FIG. 10b, a bag 830 includes a first structure 834a that comprises a first layer 816a that is a barrier layer, and a second polymeric layer 818a that comprises an odor and/or neutralizing agent. The bag 830 also includes a second structure 834b that comprises a third layer 816b that is a barrier layer, and a fourth polymeric layer 818b that comprises an odor and/or neutralizing agent. It is contemplated that the first and second

structures may be made of different compositions, such as being made of different barrier materials or odor and/or neutralizing agents.

According to yet another embodiment, the bag may be formed by three of more layers. For example, as shown in FIG. 10c, a bag 850 includes a first structure 854a that comprises a first layer 816a that is a barrier layer, a second polymeric layer 818a that comprises an odor and/or neutralizing agent, and a third polymeric layer 820a that is a permeable layer. The bag 850 includes a second structure 854b that comprises a fourth layer 816b that is a barrier layer, a fifth polymeric layer 818b that comprises an odor and/or neutralizing agent, and a sixth polymeric layer 820b that is a permeable layer. The first and second structures 854a, b are attached to first and second body panels 812a, 812b, respectively, via an adhesive or heat seal. It is contemplated that the first and second structures may be made of different compositions, such as being made of different barrier materials or odor and/or neutralizing agents.

According to one method, a polymeric structure in the form of a patch, tape or pouch is attached to a surface of a provided bag or liner. The polymeric structure may be formed by extruding a blown film. The extruded blown film may comprise two layers such as a first polymeric layer being a barrier layer and a second polymeric layer comprising an odor-masking and/or neutralizing agent. The first polymeric layer and the second polymeric layer are directly adjacent to each other. The blown film is extruded through a die to form a tube. One example of a die that may be used is an annular die, but it is contemplated that other die shapes may be used. The blown film tube is inflated such as shown, for example, in FIG. 11a with blown film tube 900. The blown film tube 900 includes a first polymeric layer 916 being a barrier layer and the second polymeric layer 918 comprising an odor-masking and/or neutralizing agent. As shown in FIG. 11b, the blown film tube 900 is collapsed so as to form a four layer structure that comprises a first polymeric layer 916a being a barrier layer, a second polymeric layer 918a comprising an odor-masking and/or neutralizing agent, a third polymeric layer 916b being a barrier layer, and a fourth polymeric layer 918b comprising an odor-masking and/or neutralizing agent. The first and third polymeric layers 916a, 916b may include a coating to assist in attaching to the body panel.

Selected portions of the second and fourth polymeric layers 918a, 918b of the structure according to one method are weakly heat sealed after the blown film tube has

been collapsed. It is desirable to weakly heat seal the layers 918a, 918b if the structures to be formed are attached to multiple locations of the bag or liner in, for example, FIGs. 10a-10c. To form the polymeric structure, the collapsed blown film is severed to a selected width and length to form a patch or tape. Additional steps may be performed to form a pouch. The first polymeric layer 916a is attached to the first body panel such that the odor-masking and/or neutralizing agent of the second polymeric layer 918a is in communication with the interior space. The third polymeric layer 916b is attached to the second body panel such that the odor-masking and/or neutralizing agent of the fourth polymeric layer 918b is in communication with the interior space. To assist in having the polymeric structure remain attached to respective body panels, the attachments of the first polymeric layer 916a to the first body panel and the third polymeric layer 916b to the second body panel must be stronger than the weakly heat sealed portions between the second and fourth polymeric layers 918a, 918b.

It is contemplated that a stronger heat seal may be employed in this method to form structures that are attached at one location as in, for example, FIGs. 9a and 9b. Such a stronger heat seal desirably remains between the two inner layers and is located such that an interior space is formed.

Alternatively, the above process may be employed with a first polymeric layer being a barrier layer, and a second polymeric layer being a permeable layer and including an odor-masking and/or neutralizing agent. For example, referring to FIGs. 11c-d, a blown film tube 930 that will form a polymeric structure comprises a first polymeric layer 916 being a barrier layer and a second polymeric layer 919 being a permeable layer and including an odor-masking and/or neutralizing agent. The first and third 916a, b polymeric layers may include a coating to attach to respective body panels. It is contemplated that the above described process may be employed with more than a two layer extruded blown film. For example, a blown film tube 950 may be extruded that comprises three layers such as shown in FIGs. 10e and f. A first polymeric layer 916 is a barrier layer, the second polymeric layer 918 comprises an odor-masking and/or neutralizing agent, and the third polymeric layer 920 is a permeable layer. The first and fourth polymeric layers 916a, b may include a coating to attach to the body panel. It is contemplated that the patch, tape or pouch may be formed using a cast-film process according to another method.

The odor-masking and/or neutralizing structure, such as a patch, tape or pouch, may be attached to the article such as a bag or liner by a pressure sensitive self-adhesive. The pressure sensitive self-adhesive may be any suitable adhesive that attaches the odor-masking and/or neutralizing patch, tape or pouch to the bag or liner. Non-limiting examples of pressure sensitive adhesives that may be used include acrylic or rubber-based adhesives.

The odor-masking and/or neutralizing tape or pouch may be roll fed onto a layer(s) of the bag or liner. The roll-fed tape or pouch may also initially include a release liner that assists in preventing or inhibiting the odor-masking and/or neutralizing material from sticking to itself before delivery to the bag or liner. The release liner, if used, is separated from the roll-fed tape or pouch before the tape or pouch is attached to the bag or liner. Examples of release liners include silicon-coated paper. Release liners, however, may be undesirable because of the additional cost associated therewith. It is contemplated that the odor-masking and/or neutralizing material may be roll fed without the use of a release liner before being attached to the bag or liner.

Alternatively, the odor-masking and/or neutralizing patch or pouch may be magazine fed during attachment to the bag or liner. The patch is preferably magazine fed, while the pouch may be magazine or roll fed. The tape is preferably roll fed during attachment to the bag or liner. For example, the tape may be unwound, cut to length and attached to the bag or liner in a desirable location.

According to another embodiment, the odor-masking and/or neutralizing patch, tape or pouch may be heat sealed directly to the article such as a bag or liner. The patch, tape or pouch may be roll fed or magazine fed before being heat sealed to the bag or liner. In a heat-sealing embodiment, a release liner would not likely be used because the patch, tape or pouch without any adhesive should not stick to itself and the release liner adds an unnecessary cost. The patch, tape or pouch may be attached to the bag or liner at several locations. The patch, tape or pouch may be attached to the body panels during the formation of the heat seals. For example, the patch, tape or pouch may be located between a side seal formed between the first and second body panels. It is contemplated that other attaching methods may be used.

The bags or liners, such as bags 10, 110, are formed by any thermoplastic material suitable for storage or collecting items, including refuse bulk storage. This, of course,

includes common sized bags such as tall kitchen bags (13 gallon size) and large garbage bags (33 gallon size). The bags or liners are typically formed from polymeric materials such as polyolefinic materials. Non-limiting examples of polyolefinic materials include polyethylenes, polypropylenes, polystyrene and combinations thereof. For example, some types of polyethylenes materials include high density polyethylenes, low density polyethylenes, linear low density polyethylenes and combinations thereof. It is also contemplated that materials such as polyethylene terephthalates may be used in forming the bags or liners of the present invention.

The thicknesses of the bags or liners may vary in the present invention but are generally from about 0.2 mil to about 3 mils and, more specifically, from about 0.3 mil to about 1.5 mil. The bags or liners may be used in combination with appropriately sized receptacles, including trash receptacles.

It is contemplated that in addition to the odor-masking and/or neutralizing patch, tape or pouch discussed above, the patch, tape or pouch may further include anti-oxidants. Anti-oxidants assist in preventing or slowing the breakdown of another material by oxygen. The use of anti-oxidants preferably prevents or inhibits undesirable aromas from items such as food. Some contemplated anti-oxidants include iron and vitamin E. An anti-oxidant patch, tape or pouch may replace the odor-masking and/or neutralizing tape or pouch depicted in FIGs. 3-8.

To assist in destroying, preventing or inhibiting growth of micro-organisms, it is contemplated that the patch, tape or pouch may further include anti-microbials. Some contemplated anti-microbials include chlorine dioxide and triclosan. Another contemplated anti-microbial is allyl isothiocyanate. An anti-microbial patch, tape or pouch may replace the scented tape or pouch depicted in FIGs. 3-8. Other anti-microbials include natural oils, such as cinnamon, peppermint or spearmint. Such an anti-microbial patch, tape or pouch may further include anti-oxidants. Additionally, the odor-masking and/or neutralizing patch, tape or pouch may further include anti-microbials. It is also contemplated that the odor-masking and/or neutralizing patch, tape or pouch may include an anti-oxidant(s) and anti-microbials.

It is contemplated that the tape, patch or pouch, may comprise a variety of active ingredients, including anti-oxidants, anti-microbials, animal or insect repellants, or combinations thereof. Examples of animal or insect repellants include the above discussed

natural oils such as cinnamon, peppermint or spearmint. It is also contemplated that the tape, patch or pouch may be a plant-respiratory regulator. For example, the tape, patch or pouch may include an ethylene absorber or emitter.

It is contemplated that the above described structures that contain an odor-masking and/or neutralizing structure (214, 234, 254, 274, 314, 414, 514, 614, 714, 734, 814, 834 and 854) may be replaced with anti-oxidants, anti-microbials, animal and insect repellants, plant-respiratory regulators and combinations thereof. It is also contemplated that the odor-masking an/or neutralizing structure may include one or more of the anti-oxidants, anti-microbials, animal and insect repellants, and plant-respiratory regulators.

While particular embodiments and applications of the present invention have been illustrated and described, it is to be understood that the invention is not limited to the precise construction and compositions disclosed herein and that various modifications, changes, and variations may be apparent from the foregoing descriptions without departing from the spirit and scope of the invention as defined in the appended claims. For example, the at least one odor masking and/or neutralizing structure may not be directly attached to one or more surfaces of the body panels of the bag or liner. It is contemplated that the at least one structure may be attached to the bag or liner at other locations such as, for example, on a hem that contains a drawtape.

CLAIMS

1. A bag or liner adapted to collect items, the bag or liner comprising:

a first thermoplastic body panel;

a second thermoplastic body panel; the first and second body panels joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth, the joined first and second body panels forming an interior space for collecting items; and

at least one structure comprising a polymeric layer with at least one of an odor-masking and an odor-neutralizing agent included therein, the polymeric layer being associated with the bag or liner such that at least one of the odor-masking and the odor-neutralizing agent is in communication with the interior space.

2. The bag or liner of claim 1, wherein the polymeric layer with at least one of the odor-masking and the odor-neutralizing agent is a scented structure.

3. The bag or liner of claim 1, wherein the polymeric layer is a permeable layer.

4. The bag or liner of claim 3, wherein the polymeric layer includes a release agent.

5. The bag or liner of claim 4, wherein the release agent is a slip additive.

6. The bag or liner of claim 1, wherein the at least one structure is attached to the bag by adhesive or a heat seal.

7. The bag or liner of claim 1, wherein the polymeric layer further includes a scent enhancing material.

8. The bag or liner of claim 7, wherein the scent-enhancing material is perlite.

9. The bag or liner of claim 7, wherein the scent-enhancing material includes silicate, vermiculite, diatomaceous earth, microspheres, talc, silicon, polyvinyl alcohol, or

combinations thereof.

10. The bag or liner of claim 1, wherein the at least one structure further includes a second layer, the second layer being adjacent to the polymeric layer.

11. The bag or liner of claim 1, wherein the polymer layer comprises from about 10 to about 50 wt. % cyclic olefin copolymer.

12. The bag or liner of claim 10, wherein the second layer is a permeable layer.

13. The bag or liner of claim 10, wherein the second layer is a barrier layer which assists in preventing at least one of the odor-masking and the odor-neutralizing agent from penetrating the body panel.

14. The bag or liner of claim 13, wherein the second layer comprises ethylene vinyl alcohol, polyvinylidene chloride, polyester, nylon, cyclic olefin copolymers, metallized polymer or combinations thereof.

15. The bag or liner of claim 10, wherein the second layer comprises foil.

16. The bag or liner of claim 10, wherein the at least one structure further includes a third layer.

17. The bag or liner of claim 16, wherein the third layer includes a release agent.

18. The bag or liner of claim 16, wherein the third layer comprises from about 10 to about 50 wt. % cyclic olefin copolymer.

19. The bag or liner of claim 16, wherein the second layer is a barrier layer and the third layer is a permeable layer, the polymeric layer being located between the second layer and the third layer.

20. The bag or liner of claim 19 further comprising a fourth layer located between the second layer and the polymeric layer.

21. The bag or liner of claim 16, wherein at least one layer includes an anti-oxidant, anti-microbial, plant-respiratory regulator or combinations thereof, and the at least one structure is attached to the bag or liner such that the anti-oxidant, anti-microbial, plant-respiratory regulator or combinations thereof agent is in communication with the interior space.

22. The bag or liner of claim 1, wherein the at least one structure further includes a peelable cover, the peelable cover adapted to cover at least a portion of at least one of the odor-masking and the odor-neutralizing agent.

23. The bag or liner of claim 1, wherein the structure is in the form of a patch or tape and further wherein the patch or tape is located at a top half portion of the bag or liner.

24. The bag or liner of claim 1, wherein each of the first and second body panels has an interior surface and an exterior surface, the at least one structure is attached to at least one of the interior surfaces of the first and second body panels.

25. The bag or liner of claim 10, wherein the polymeric layer is attached to at least one surface of the first and second body panels.

26. The bag or liner of claim 1, wherein each of the first and second body panels has an interior surface and an exterior surface, the at least one structure is attached to at least one of the exterior surfaces of the first and second body panels.

27. The bag or liner of claim 1, wherein the thickness of the bag or liner is from about 0.2 mil to about 3 mils.

28. The bag or liner of claim 1, wherein the bag or liner further includes a fastener adapted to open or close the bag or liner.

29. The bag or liner of claim 1, wherein the first and second body panels form a handle.

30. The bag or liner of claim 1, wherein the first and second body panels are sealed along at least one of the bottom and the pair of opposing sides.

31. The bag or liner of claim 1, wherein the first and second body panels are sealed along the pair of opposing sides and the bottom is formed by folding a single thermoplastic sheet upon itself.

32. The bag or liner of claim 1, wherein the first and second body panels are sealed along one of the pair of the opposing sides and the bottom, and the other of the pair of opposing sides is formed by folding a single thermoplastic sheet upon itself.

33. The bag or liner of claim 1, wherein the at least one structure further includes a release liner.

34. The bag or liner of claim 1, wherein the first and second thermoplastic body panels comprise polyethylene.

35. The bag or liner of claim 1, wherein the at least one structure is thermoplastic.

36. The bag or liner of claim 1, wherein the first structure further includes a second layer adjacent to the first-layer,

the bag or liner further comprising a second structure, the second structure including a first-layer, a second layer adjacent the first layer, and at least one of an odor-masking and an odor-neutralizing agent, the first layer of the second structure being a barrier layer, and the second-layer of the second structure being a permeable layer;

wherein the second layer of the first structure is heat sealed at selected locations to the second layer of the second structure such that the respective odor-masking or neutralizing agent is adapted to enter the interior space of the bag or liner therebetween.

37. The bag or liner of claim 36, wherein at least one of the first and second structures include three layers.

38. The bag or liner of claim 36, wherein at least one of the first and second structures further includes a third layer, and further wherein the first layer is a barrier layer, the second-layer includes at least one of the odor-masking and the odor-neutralizing agent therein, and the third layer is a permeable layer.

39. A method of making a bag or liner adapted to collect items, comprising:

providing a first thermoplastic body panel and a second thermoplastic body panel that have been joined along a pair of opposing sides and a bottom bridging the sides so as to form an open mouth, the joined first and second body panels forming an interior space for collecting items;

providing at least one structure, the at least one structure comprising a polymeric layer with at least one of an odor-masking and an odor-neutralizing agent included therein; and

associating the polymeric layer with the bag or liner such that at least one of the odor-masking and the odor-neutralizing agent is in communication with the interior space.

40. The method of claim 39, wherein the attaching of the polymeric layer to the bag or liner includes roll feeding the first layer onto the bag or liner.

41. The method of claim 39, wherein the attaching of the polymeric layer is to at least one surface of the first and second body panels by an adhesive or a heat seal.

42. The method of claim 39, wherein the at least one structure further includes a

second layer, the second layer being adjacent to the polymeric layer.

43. The method of claim 42, wherein the second layer is a barrier layer.

44. The method of claim of claim 42, wherein the at least one structure further includes a third layer.

45. The method of claim 44, wherein the third layer is a permeable layer, and further wherein the polymeric layer is located between the second layer and the third layer.

46. The method of claim 39, wherein the at least one structure is in the form of a patch or a tape.

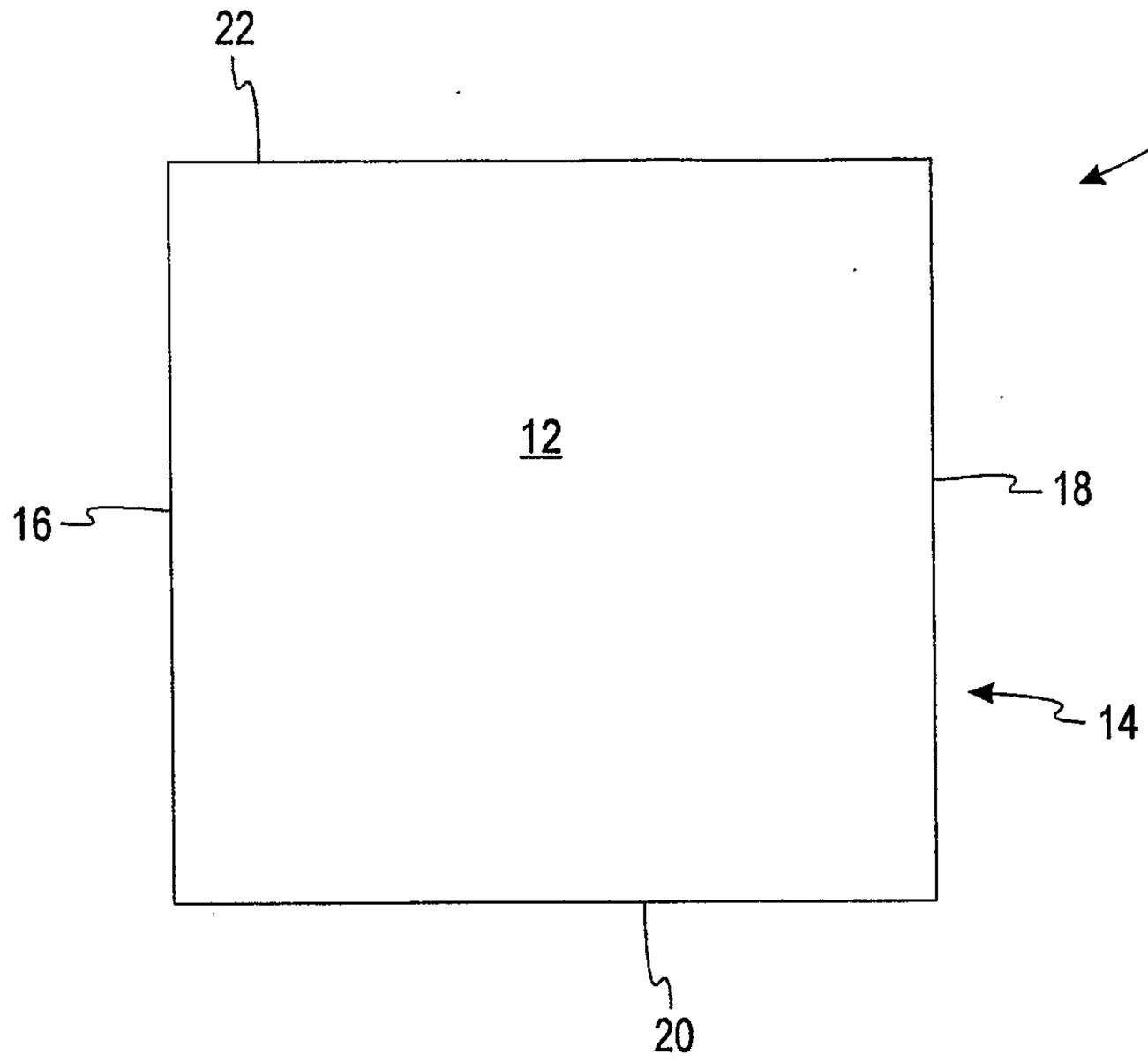


Fig. 1

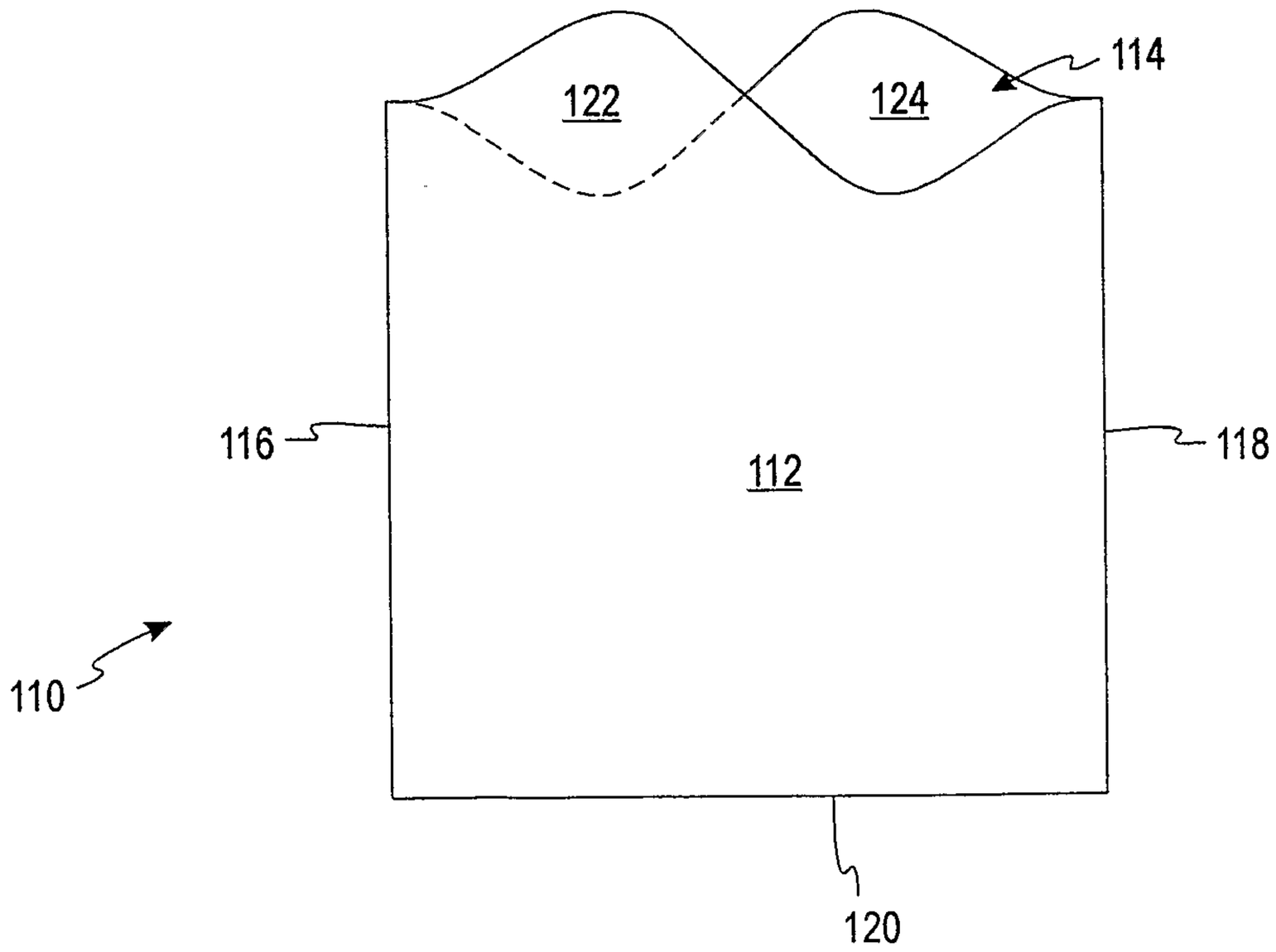


Fig. 2a

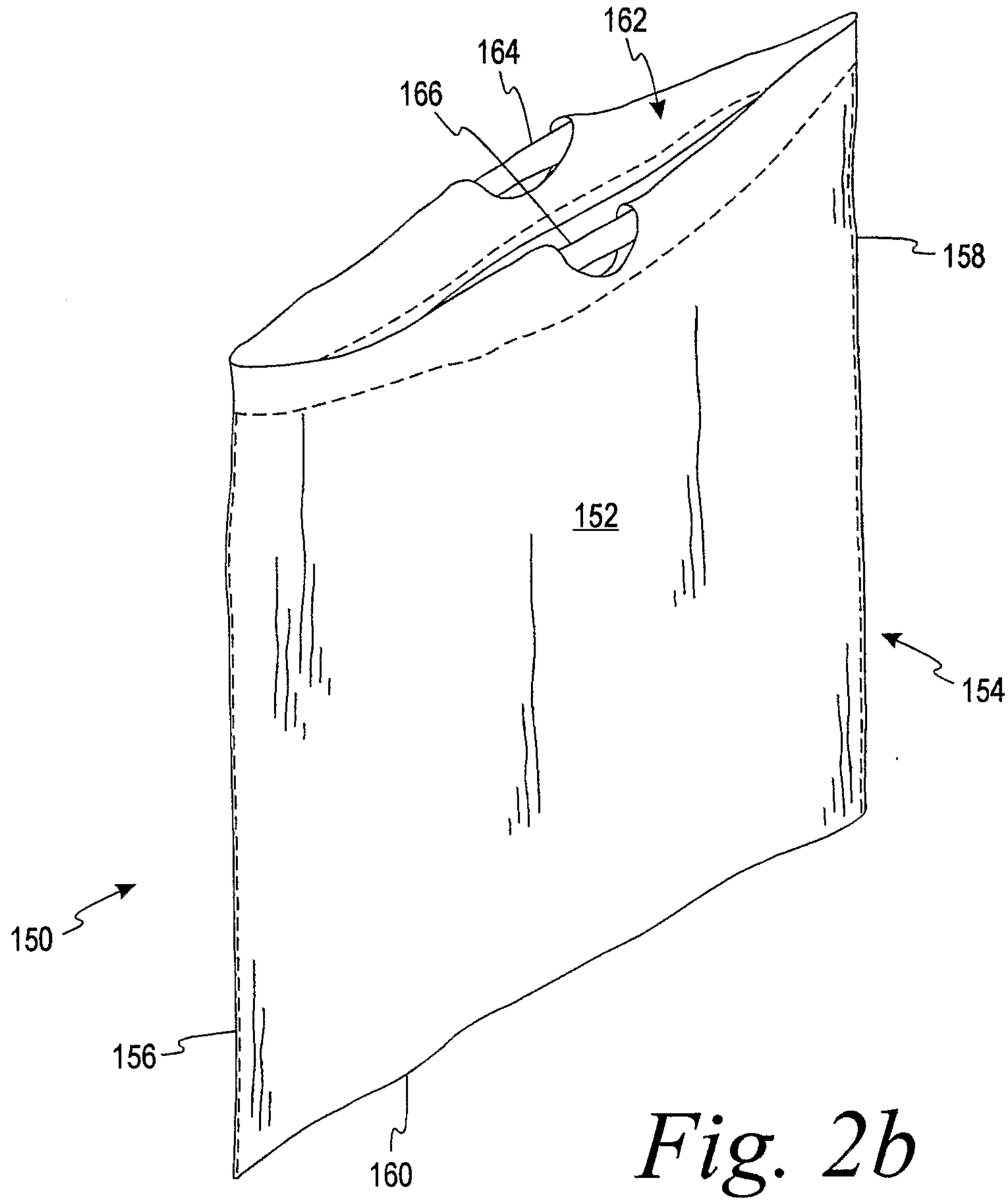


Fig. 2b

Fig. 3a

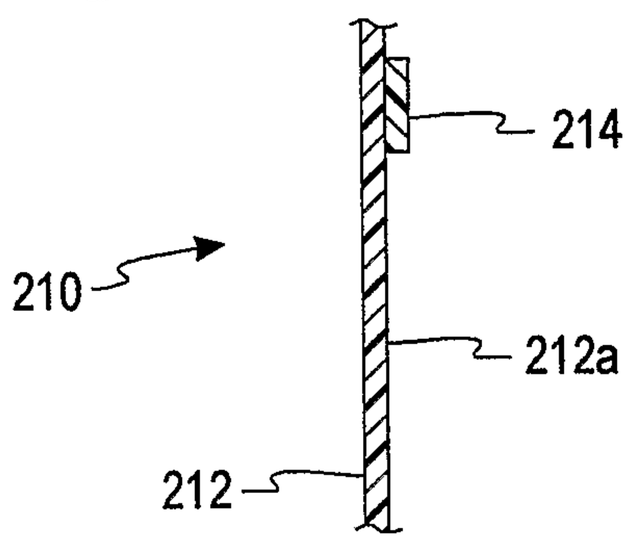


Fig. 3b

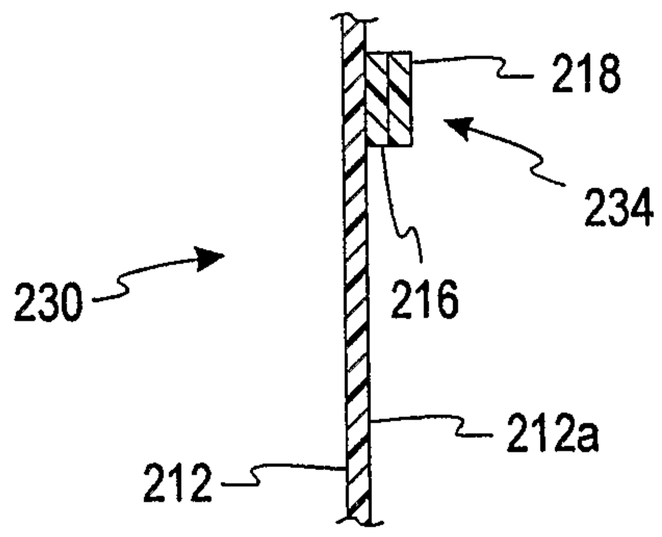


Fig. 3c

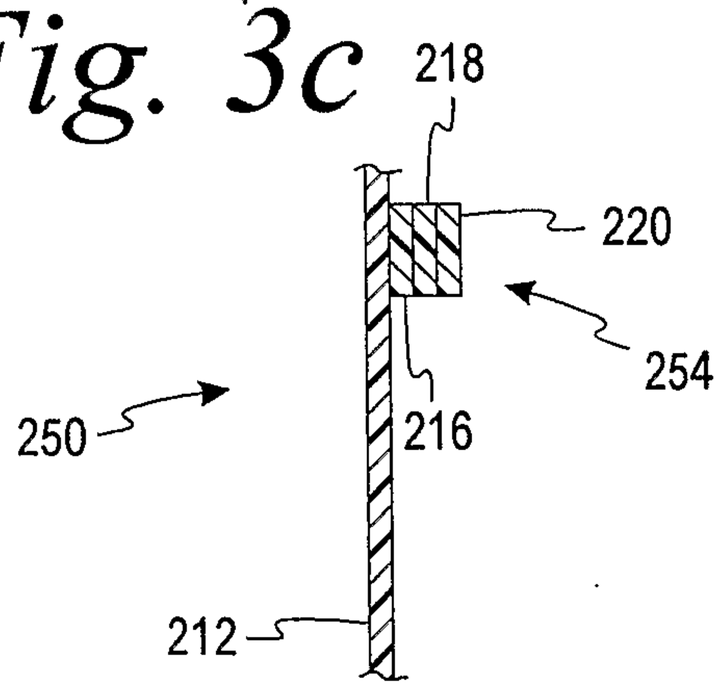


Fig. 3d

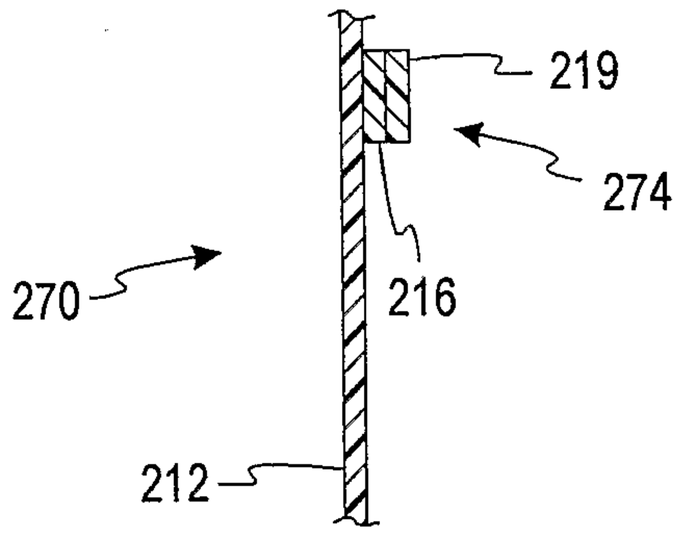


Fig. 4

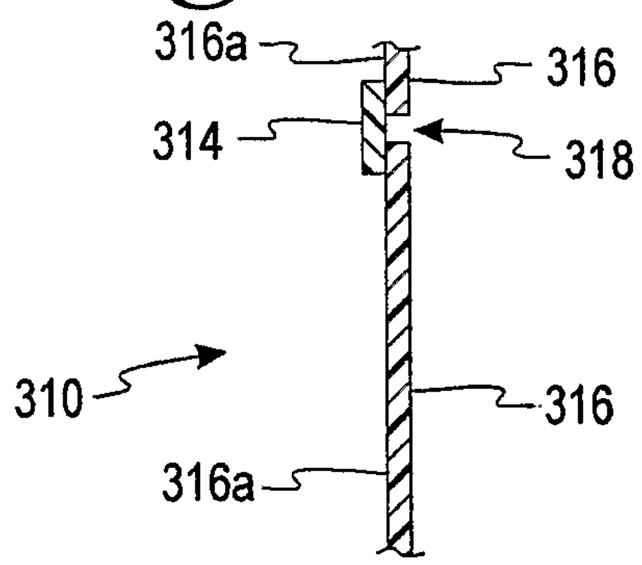


Fig. 5

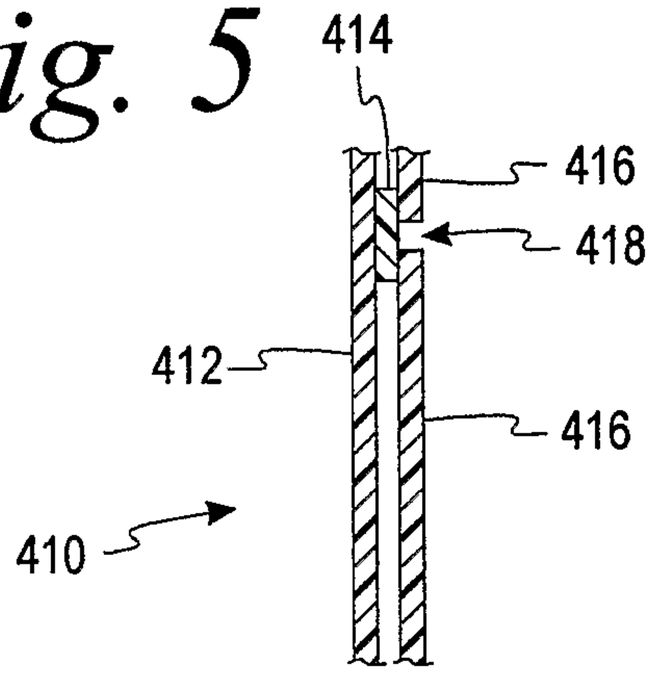


Fig. 6

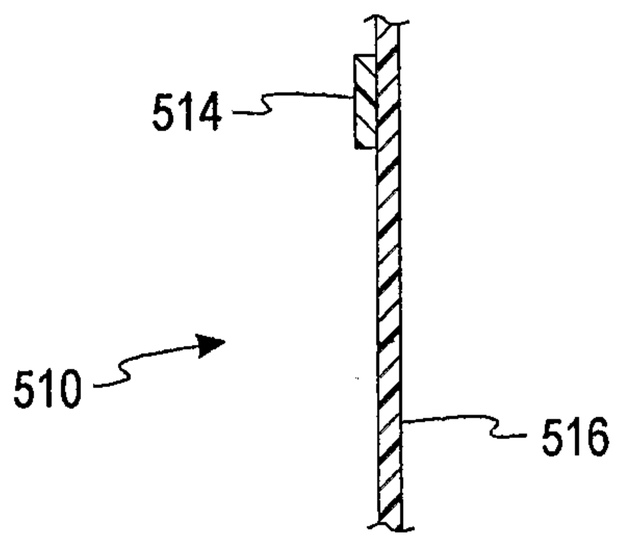


Fig. 7

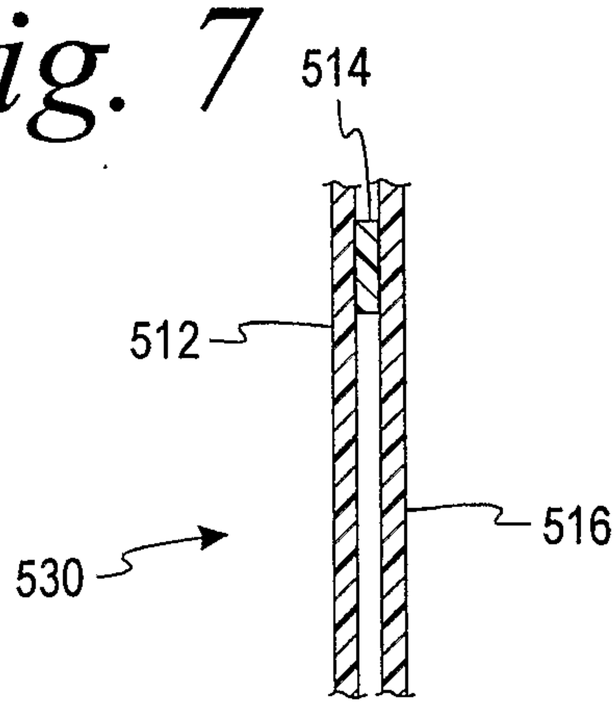
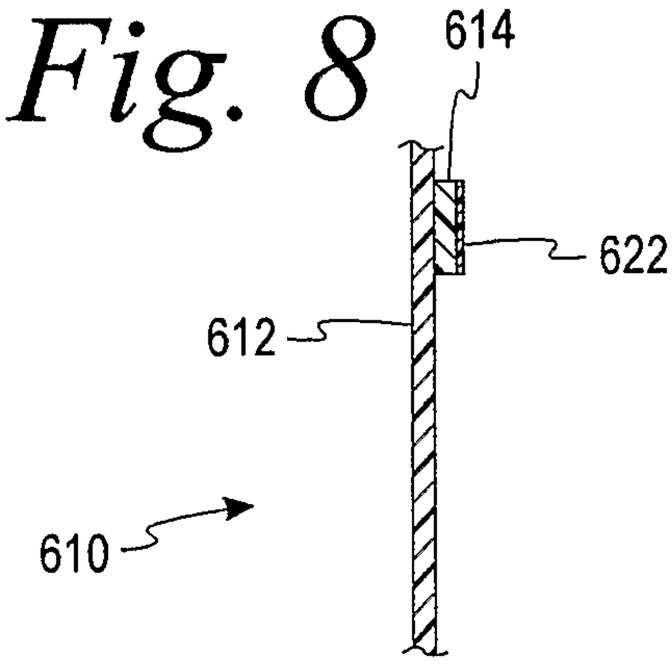


Fig. 8



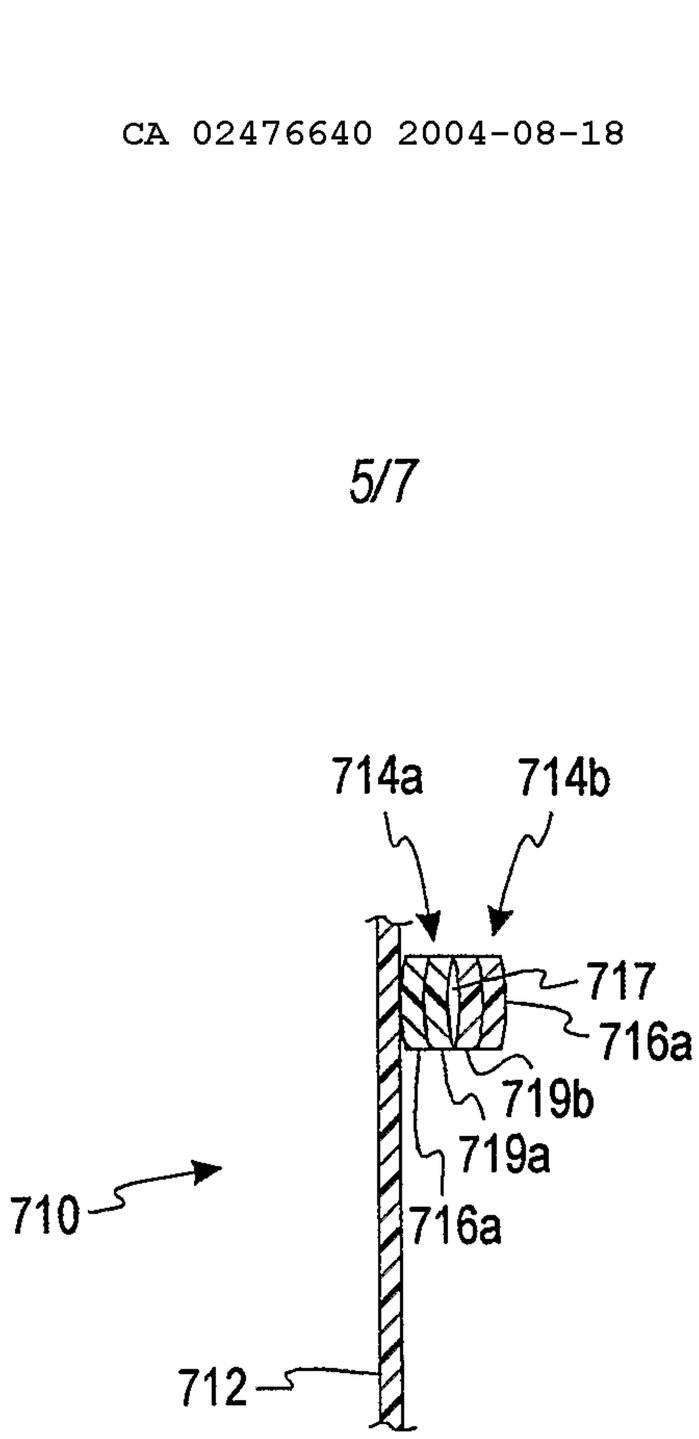

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Fig. 9a

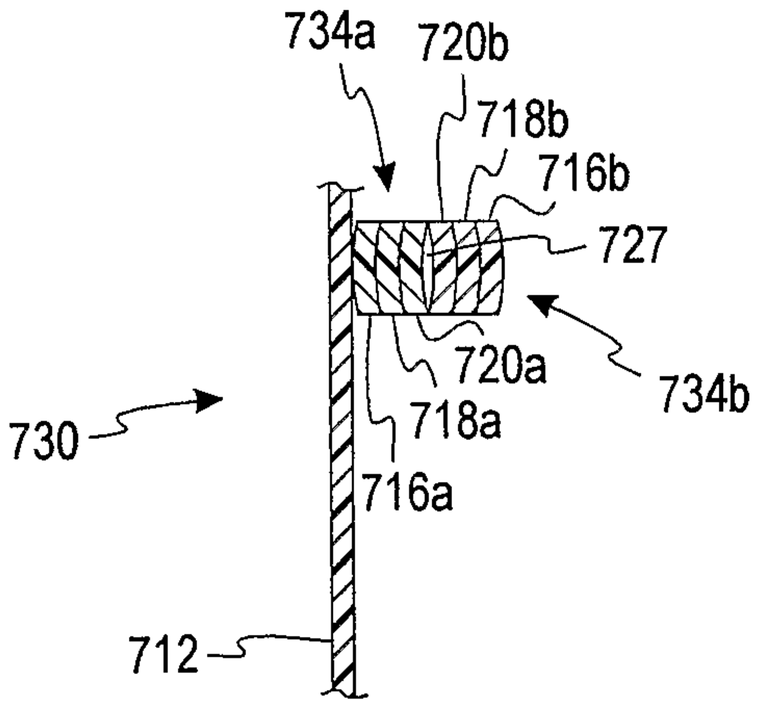
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Fig. 9b

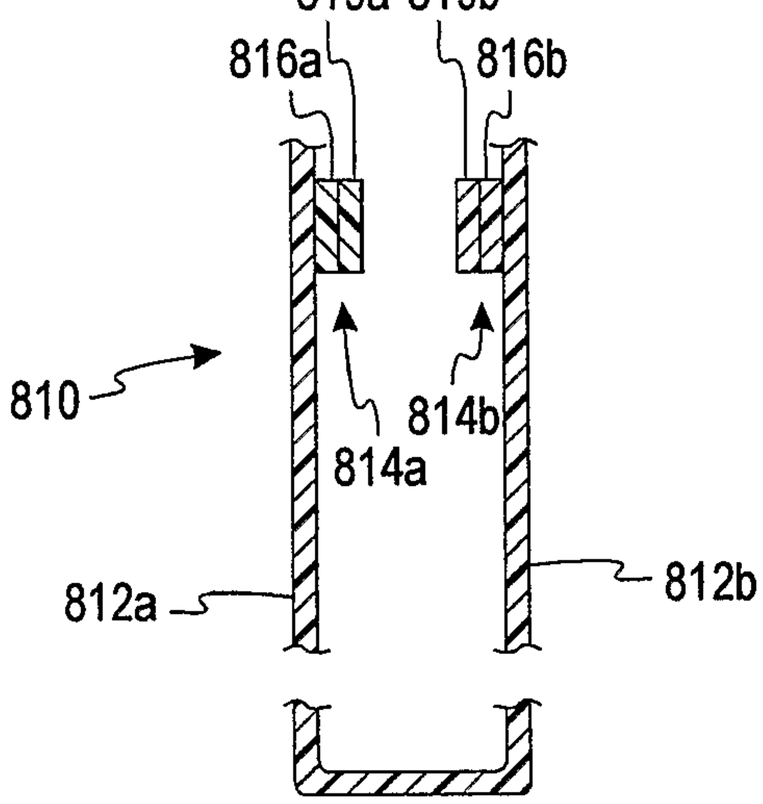


Fig. 10a

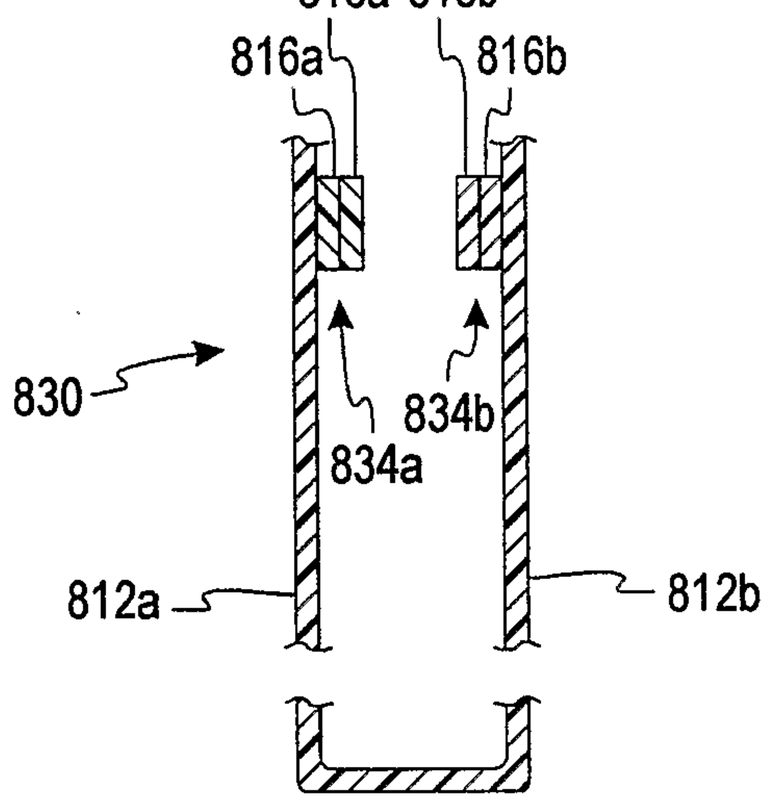


Fig. 10b

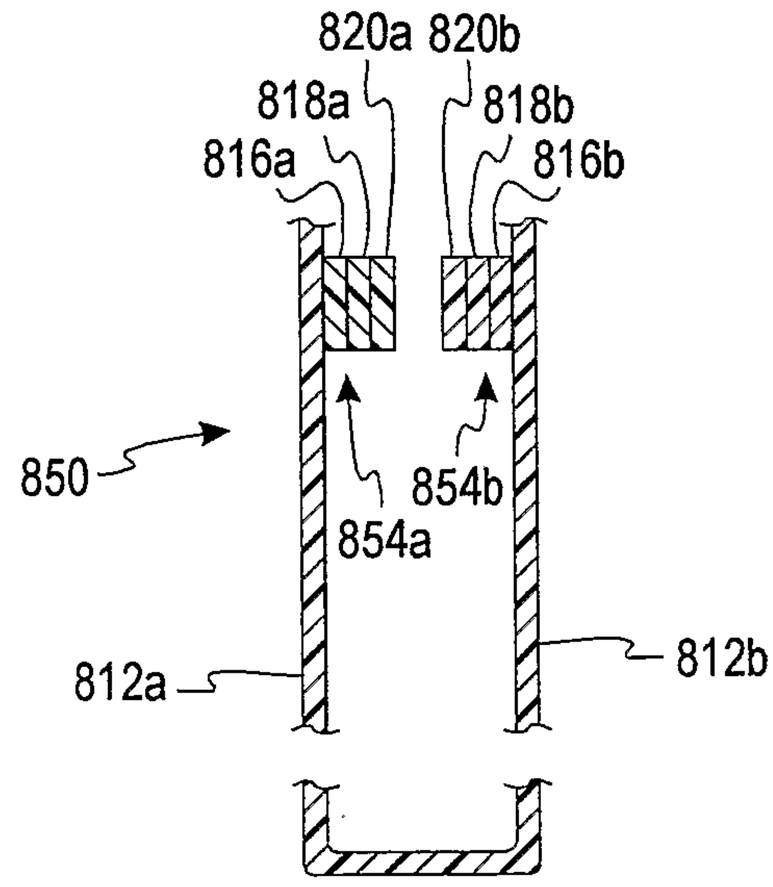


Fig. 10c

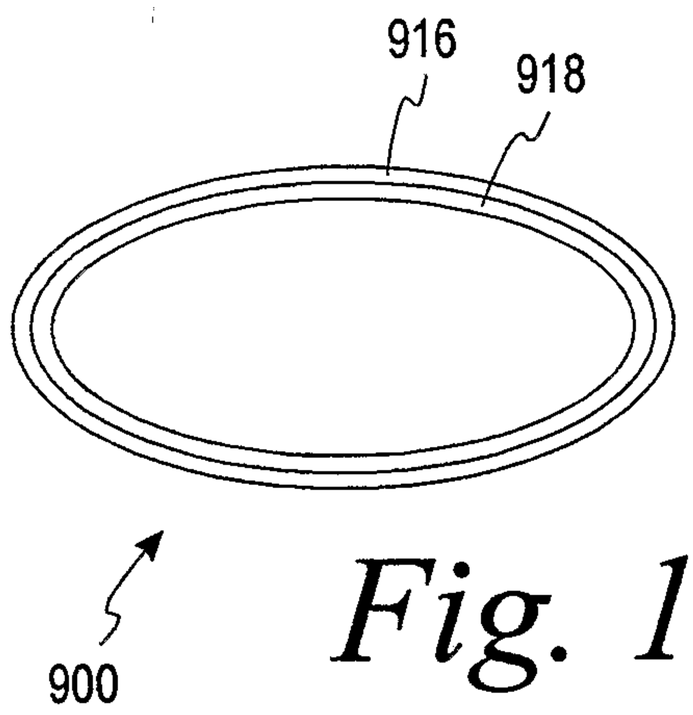


Fig. 11a

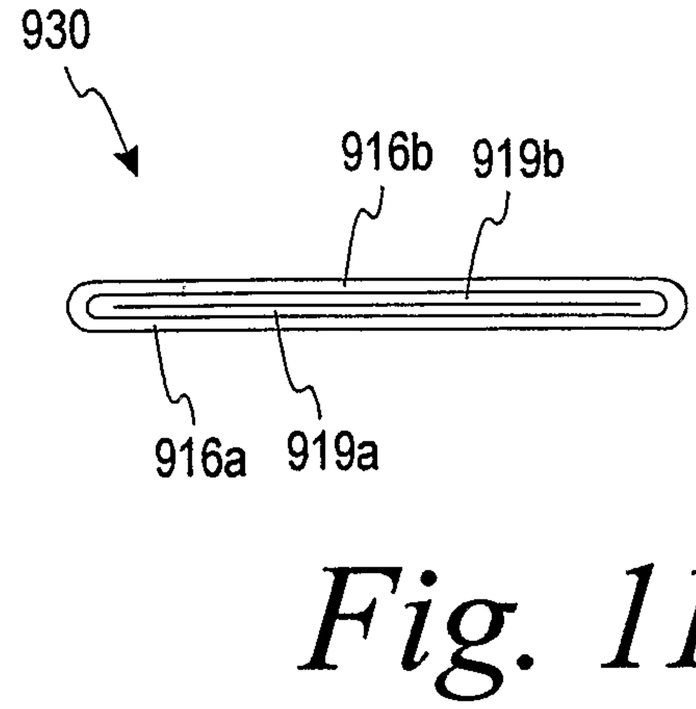


Fig. 11d

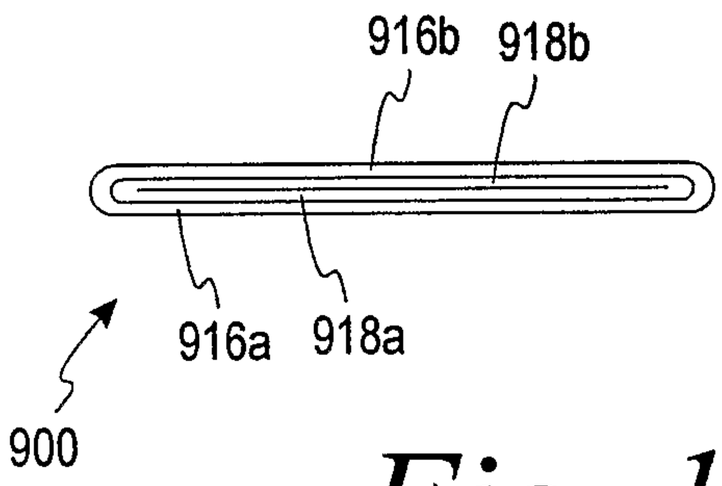


Fig. 11b

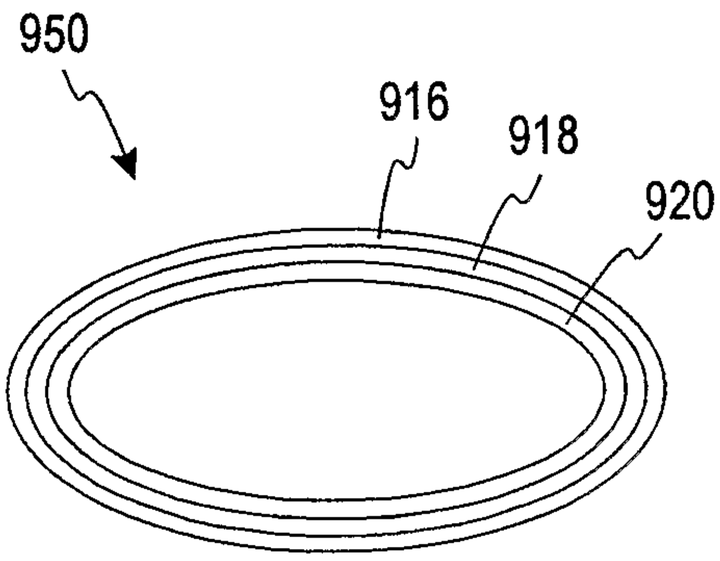


Fig. 11e

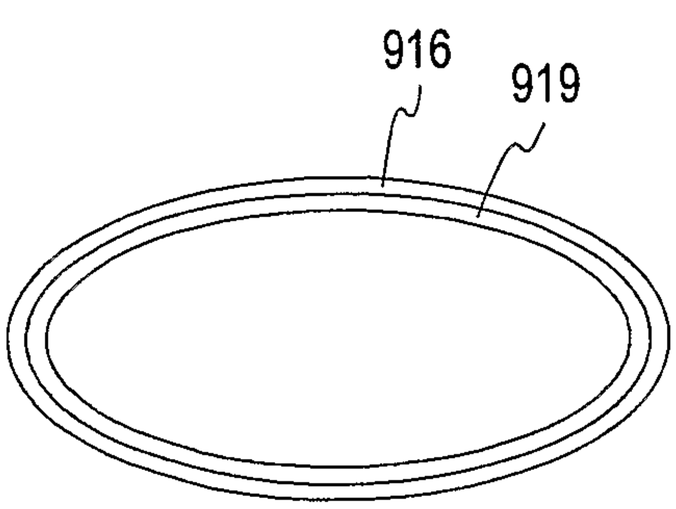


Fig. 11c

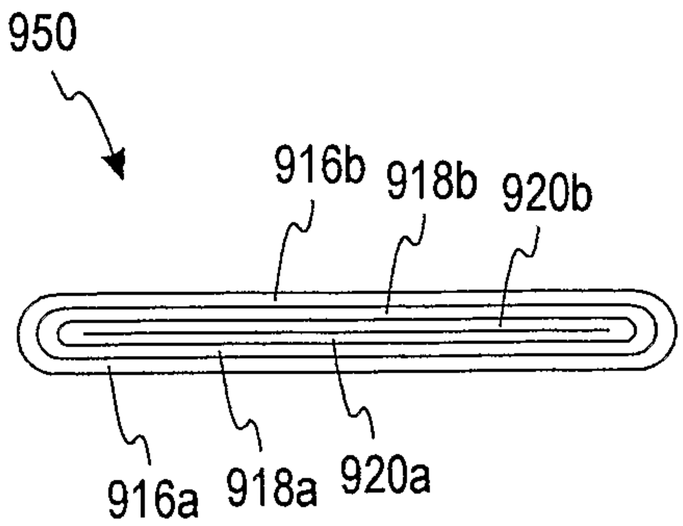
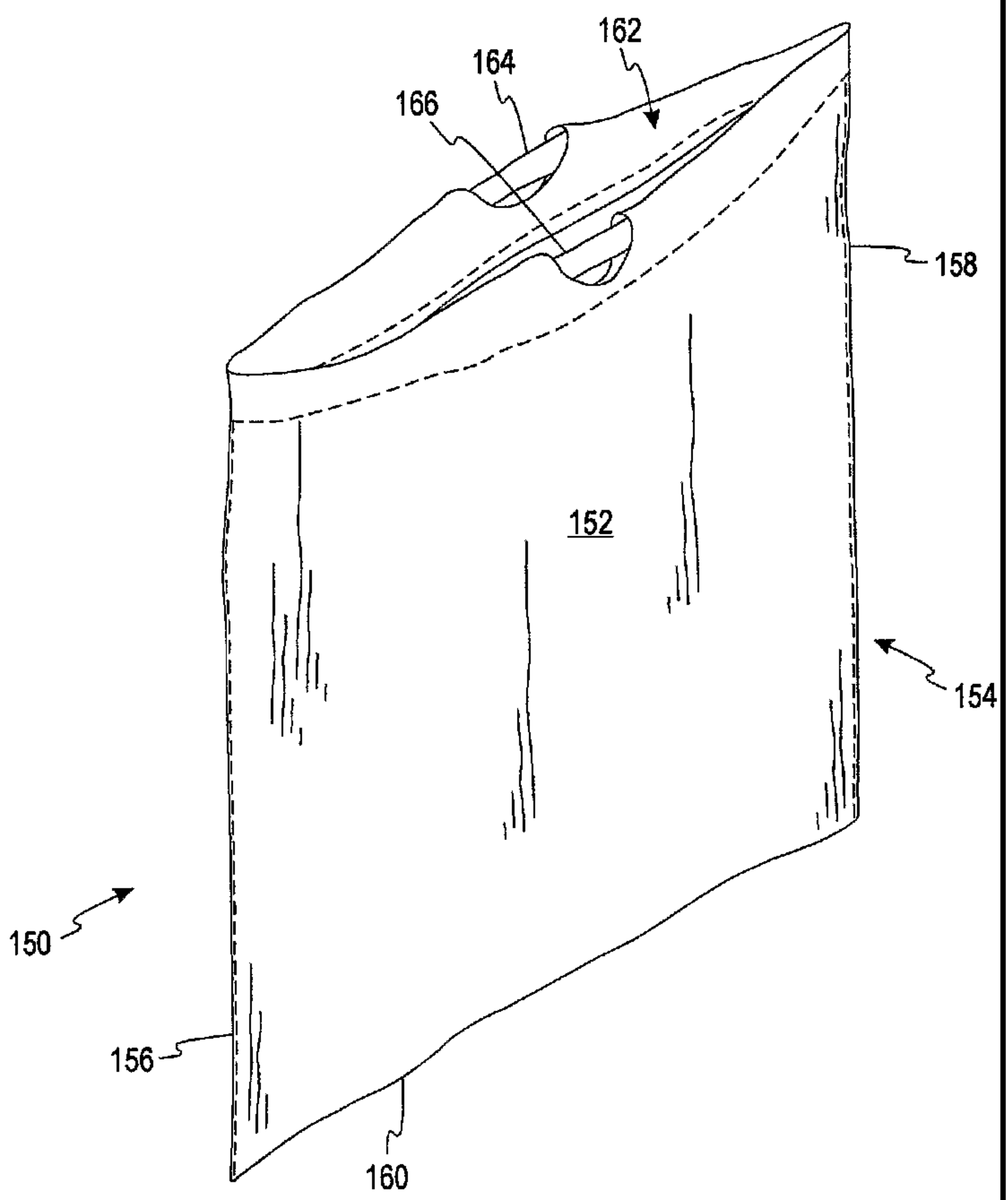


Fig. 11f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