A pouch formed of sheeted material for use to contain a liquid is provided. The pouch comprises first and second walls formed by the sheeted material with each wall having peripheral edges; a body having a base, first and second upper body side edges, and first and second lower body side edges; a neck integrally formed with the body; and an internal reservoir defined by the body and the neck between the walls and above the base. The pouch generally has a broad base and a narrow neck. When the internal reservoir is filled with a liquid and the pouch is sealed, the pouch stands on the base on a supporting surface, and is stable in an upright position.
Figure 4
STAND-UP POUCH

FIELD OF THE INVENTION

This invention relates to containers, and particularly relates to containers in the form of pouches. More particularly, the pouches of the present invention are formed of sheeted material, and are thus flexible. Specifically, the flexible pouches of the present invention are structured in such a manner that when the pouches are filled and are standing on the base on a supporting surface, the pouches are stable in an upright position.

BACKGROUND OF THE INVENTION

The use of flexible pouches has, of course, been known for many years. Typically, flexible pouches are used to contain such products as beverages, shampoo, soap, detergent, lotion, candies, nuts, coffee beans, spices, fertilizers, cat food, just to name a few.

In many instances, consumers prefer using flexible containers such as flexible pouches rather than rigid containers such as metallic cans, glass bottles, plastic bottles, paper cartons, and the like, for a variety of reasons. Metallic cans, for example, are difficult to open. Furthermore, once opened, the metallic cans may have sharp edges or burrs, which is a serious safety hazard to children drinking from such containers. Similarly, glass bottles can crack, chip, break or even explode, resulting in sharp edges, and are thus particularly unsuitable for children to handle on their own. Thus, flexible containers are generally safer for children to manipulate.

Typically, flexible pouches are made from sheets of plastic. As a result, flexible pouches are relatively lightweight. Furthermore, flexible pouches generally occupy much less storage space as compared to rigid containers. Indeed, flexible pouches which are filled with materials may be squeezed, to a certain degree, into relatively tight nooks or crannies which would not otherwise accommodate a rigid container of comparable general shape. When the flexible pouches are not filled with materials, they are compacted into a flattened condition such that they can be stored in a relatively small amount of space.

A number of flexible pouches for use as beverage containers are available on the market. However, when these flexible pouches are filled, they are often unstable in an upright position even when they are resting on a support surface. As discussed above, flexible pouches are typically made from thin and flexible plastic materials, and thus such flexible pouches do not have the same sturdiness as cans, bottles and other rigid containers as well as the stability of such rigid containers when filled and in an upright position. In fact, many existing flexible pouches on the market tend to wobble and thus can be easily tipped over, leading to unnecessary beverage spills and resulting in wasted product and a mess. This is especially a problem for children handling such filled flexible pouches.

In order to improve the stability of filled flexible pouches, a base, such as a bottom gusset or pad, is added to many of the prior art flexible pouches. Typically, the base portion of these flexible pouches is manufactured by overlapping layers of sheeted plastics in selected locations. The layers are then fused by heat sealing. In some instances, as many as six layers of sheeted plastics are brought together at junctions and are fused. With such construction, many of these flexible pouches are prone to capillary leaks. Further, small amount of the beverage may be trapped in the region of the thick seams, which is particularly unappealing to the consumers.

The present inventor herein has provided a pouch formed of sheeted material for use to contain a liquid which overcomes at least one of the disadvantages described above. The pouch of the present invention is flexible, lightweight, inexpensive to produce and easy to handle. More specifically, the pouch of the present invention is structured in such a manner that when the pouch is filled and is standing on the base on a supporting surface, the pouch is stable in an upright position.

DESCRIPTION OF THE PRIOR ART

A number of patents which describe various kinds of stand-up pouches are known to the inventor herein. They included the following:

U.S. Pat. No. 5,378,065 issued on Jan. 3, 1995 to TOBOLKA teaches a single, unitary piece of plastic folded and bonded together to form a container. The container includes a body, and a spout extending upwardly from the shoulder of the body. The spout forms an integral straw so as to allow an individual to drink the contents of the container. A restriction in the container is positioned at the juncture between the body of the container and the spout so as to reduce the pressure of liquid flowing from the body to the spout.

U.S. Pat. No. 5,761,884 issued on Jun. 9, 1998 to TOBOLKA teaches a method of making a filled container. The container as taught therein is formed of flexible plastic and includes a body with outwardly tapering sides defining an internal reservoir and a tubular spout extending upwardly from the body. The spout has an internal passage in fluid communication with the reservoir. The method involves the step of pinching opposed bottom corners of the body to form generally flattened triangular portions extending outwardly therefrom, and forming seals along the pinch lines to create a generally planar base on the pouch.

U.S. Pat. No. 5,800.062 issued on Sep. 1, 1998 to TOBOLKA is a divisional patent of the above U.S. Pat. No. 5,761,884. In U.S. Pat. No. 5,800,062, the inventor teaches a container having a body with an internal reservoir, and a tubular spout extending from the body and having an internal passage which is in fluid communication with the reservoir. Further, the container has a constriction so as to create a low pressure zone in the passage downstream of the constriction as liquid flows from the reservoir into the passage. The container has means to inflate the spout as liquid flows along the passage.

U.S. Pat. No. 6,164,042 issued on Dec. 26, 2000 to TOBOLKA teaches a container with a dispensing spout and method for forming such a fluid-filled container from an upright tube made of flexible material. The method involves the steps of delivering fluid to the tube to fill at least a portion of the tube, and forming lower and then upper curved seals across the tube at vertically spaced locations below the fluid level in the tube. The curved seals are mirror images of one another.
U.S. Pat. No. 6,195,965 B1 issued on Mar. 6, 2001 to TOBOLKA teaches a container and method of making the same. The container has a dispensing spout and a main body with two opposed pointed lower corners. The method for manufacturing the plurality of containers from a tube of flexible packaging material includes the steps of transversely severing the tube into a plurality of individual containers, pinching the pointed lower corners of each container so as to collapse the corners into a flattened triangular shape. At the same time, heat is applied in order to weld the corners. Each flattened corner is bent such that it lies under the main body while the flattened corner retains heat.

TOBOLKA Canadian Patent Application 2,284,329 filed on Sep. 29, 1999 teaches a mechanism for forming a heat seal and a cut transversely of a tube of flexible packaging material. The mechanism includes a carrier to contact the tube, heat sealing means on the carrier to form a heat seal across the tube when contact takes place, and a resistive wire on the carrier which can be energized to cut the tube when the carrier is in contact with the tube after the heat seal has been formed.

TOBOLKA Canadian Patent Application 2,361,980 filed on Nov. 13, 2001 teaches a heat sealing and cutting mechanism, and a container forming apparatus incorporating the same. A heat sealing and cutting mechanism to form a heat seal and a cut across a tube of flexible packaging material includes a carrier to contact the tube. A pair of closely spaced heat sealing bands are disposed on the carrier and are energizable to form closely spaced heat seals across the tube when the carrier is in contact with the tube. The heat sealing bands are configured to define temperature gradients along the heat sealing bands. A cutting wire is also disposed on the carrier and is positioned between the heat sealing bands. The cutting wire is energizable to cut the tube when the carrier is in contact with the tube.

U.S. Pat. No. 5,860,743 issued on Jan. 19, 1999 to LARKIN et al. teaches a stable flexible pouch and method for making the pouch. The pouch has a flexible compartment with a rim formed around the bottom of the compartment. The rim is spaced from and extends outwardly from the compartment bottom. Further, the rim has three coplanar feet so as to stabilize the pouch when the pouch is resting on the rim. When the pouch is in a flat, empty position, the coplanar feet are generally flush with the rim. The inventors also teach a method for making the pouch described immediately above. The method includes the steps of forming the pouch with the compartment, providing a rim around the bottom of the compartment, spacing the rim from the bottom of the compartment, and removing a portion of the rim at the outer edge to form the plurality of coplanar feet.

U.S. Pat. No. 6,076,968 issued on June 20, 2000 to SMITH et al. teaches a flexible pouch formed from first and second sheets which are sealed along their side edges. Two gussets are provided at the top and the bottom, respectively, of the sheets. The bottom of the uppermost gusset is recessed such that a pocket is formed at one end of the pouch. The two sheets, and the two gussets form a compartment within the pouch. In order to remove the contents from the compartment, a straw or other suitable instrument can be used to puncture the uppermost gusset. The pocket has a wide mouth such that a straw can be easily inserted.

U.S. Pat. No. 6,164,825 issued on Dec. 26, 2000 to LARKIN et al. is a continuation-in-part of U.S. Pat. No. 5,860,743 and U.S. Pat. No. 6,076,968 which are discussed above. In U.S. Pat. No. 6,164,825, the flexible pouch has a flexible compartment with a bottom. The pouch has a rim encircling the bottom of the compartment with portions of the rim being removed so as to form stabilizing coplanar feet. The pouch also has a wide-mouth pocket. A straw can be inserted into this pocket to pierce a frangible membrane for discharge of the contents inside the pouch.

U.S. Pat. No. 4,886,373 issued on Dec. 12, 1989 to CORELLA teaches a peripherally sealed, flexible, dispensing package having a self-supporting, stand-up configuration. The package has a circumferential, flexible wall that defines a compartment which contains fluidic material, an inverted portion of the flexible wall extending into the compartment, and a self-supporting rim formed by the confluence of the outer flexible wall with the inverted inner wall. The outer flexible wall and the inverted inner wall are in spaced relationship and there is no flattening of the inverted portion due to the load of the fluidic material in the self-supporting mode.

U.S. Pat. No. 4,887,912 issued on Dec. 19, 1989 to STUMPF teaches a stand-up bag which is made of a heat-weldable sheet material. The bag has a front face and a rear face which are connected to one another along their edges. Either the front face or the rear face are provided with a re closable threaded closure. The closure includes a pipe socket formed with screw threads for engagement with screw threads of a removable screw cap.

U.S. Pat. No. 5,018,646 issued on May 28, 1991 to BILLMAN et al. teaches a squeezable fluid container which is made of a flexible plastic material. The container has a longitudinal axis and a cavity for containing a dispensable fluid. Further, the container has flexible sidewalls, a closed bottom, a pair of spaced-apart sealed deformable side edge margins, and a sealed deformable upper edge margin. The upper edge margin is unitary with an upper edge portion of each of the side edge margins, and the upper edge margin defines a fluid discharge passageway that communicates with the fluid cavity. The container further includes an indent, which is defined by at least one of the side-edge margins which divide the fluid cavity into two fluid chambers along the longitudinal axis.

U.S. Pat. No. 5,352,043 issued on Oct. 4, 1994 to TAKAGAKI et al. teaches a self-supporting bag, a method of production thereof, and an apparatus for production thereof. The bag has a trunk part and a bottom part, both of which are made of a multilayer plastic film having a heat adhesive plastic layer as the inner layer. The inner layer or the outer layer of the film of the trunk has a section comprising convex parts and concave parts which are adjacent to each other. The container further has linear ribs in the trunk section. The ribs are formed by pressing a positive mold having linear protrusions at the top face against the multilayer plastic film.

U.S. Pat. No. 5,795,071 issued on Aug. 18, 1998 to SASAKI et al. teaches a standing pouch for containing a fluid material. The standing pouch is provided with a relief which is capable of converting to a pourer at an upper corner portion. A pourer is defined therein as an opening for pouring.

U.S. Pat. No. 5,937,617 issued on Aug. 17, 1999 to YEAGER et al. teaches a pouch with a pre-inserted straw...
and a method of making the same. The pouch is made from a web of flexible packaging material, and the pre-inserted straw is completely enclosed within the confines of the pouch. By removing a portion to the pouch, the top end of the straw is exposed.

U.S. Pat. No. 5,941,642 issued on Aug. 24, 1999 to DARMSTADTER teaches a self-contained fluid dispensing system. The system includes a flexible package with a removable margin portion and retention elements by which a tube is held in a certain position within the package. When the removable margin is detached and pressure is applied to the exterior surface of the package sides, the dispensing end of the tube is indirectly pushed out from within the package inner volume and above the margin of the package. Upon release of the pressure, the tube slides back within the inner volume for storage of the tube.

U.S. Pat. No. 6,220,756 B1 issued on Apr. 24, 2001 to DARMSTADTER is a continuation of U.S. Pat. No. 5,941,642 which is described immediately above.

U.S. Pat. No. 5,971,613 issued on Oct. 26, 1999 to BELL teaches bag constructions having inwardly directed side seal portions. The bag includes first and second opposed panel sections, a base gusset member oriented in extension between the first and second opposed panel sections, and first and second side seals which define a bag construction interior between the panel sections. Each of the first and second side seals has an inner edge portion adjacent to the bag construction interior.

Finally, U.S. Pat. No. 6,120,183 issued on Sep. 19, 2000 to BUCHANAN el al. teaches a container and a method of manufacturing the same from a web of flexible material. The container has two opposed sides that extend from the sides of a bottom along two opposed inverted V-shaped junctures. The sides are sealed together along two side seals that have side seal extensions which extend outside of the bottom, spaced from the sides. Two opposed, inverted V-shaped reinforcement seals extend outwardly from the two bottom to sides junctures and from the side seal extensions.

SUMMARY OF THE INVENTION

In accordance with one aspect of the present invention, there is provided a pouch ofWeb of liquids for use to contain a liquid. The pouch comprises first and second walls, a body, a neck integrally formed with the body, and an internal reservoir. The first and second walls are formed by the sheeted material, and each wall has peripheral edges. The body has a base, first and second upper body side edges, and first and second lower body side edges. The neck has a top edge, and first and second neck side edges. The internal reservoir is defined by the body and the neck between the walls and above the base.

The first and second lower body side edges extend between the base and the respective first and second upper body side edges, forming first and second base corners and first and second body corners, respectively. The first and second lower body side edges are angularly directed away from the base such that the distance between the first and second body corners is greater than the distance between the first and second base corners.

The internal reservoir is formed when the peripheral edges of the first and second walls are in an opposed relationship and are in contact each with the other.

The pouch is structured in such a manner that when the internal reservoir is filled with a liquid and the pouch is sealed, the pouch stands on the base, and is stable in an upright position.

In one preferred embodiment of the invention, the pouch is formed from the sheeted material such that at least one of the first and second upper body side edges, the top edge of the neck, and the base, is a fold between the first and second walls so as to be seamless.

In another preferred embodiment of the invention, the pouch is formed from the sheeted material in the form of a tube such that the top edge of the neck and the base are seamless.

In a further preferred embodiment of the invention, the body further comprises first and second shoulders which extend inwardly from the respective first and second upper body side edges, and terminate at the neck. The neck extends upwardly from the first and second shoulders.

Typically, the pouch is symmetrical about a longitudinal axis extending from a midpoint of the top edge of the neck to a midpoint of the base. In one embodiment, the pouch is one of a plurality of similar pouches, and each one of the pouches is in a complementary fashion to another during the pouch formation process, such that the neck of a first pouch is adjacent to the body of a second pouch, and the body of the first pouch is adjacent to the neck of the second pouch.

The first and second lower body side edges are angularly directed away from the base in such a manner that each of the first and second lower body side edges forms an exterior angle between 50 to 70 degrees relative to the base when the pouch is in a flattened empty condition.

In yet another embodiment, the exterior angle is between 55 to 65 degrees when the pouch is in a flattened empty condition.

The first and second lower body side edges are chosen from the group of geometric elements consisting of a straight line extending between the base and the respective first and second upper body side edges, a curved line extending between the base and the respective first and second upper body side edges, and a sawtooth extending between the base and the respective first and second upper body side edges.

When the first and second lower body side edges are curved lines, the curved line is chosen from the group of curvilinear elements consisting of a portion of an ellipse, a portion of a parabola, a portion of a circle, and a portion of a hyperbola.

In one preferred embodiment, the neck has first and second top side edges extending outwardly from the respective first and second neck side edges to the top edge of the neck, forming first and second top side corners, such that the top edge of the neck defines a distance less than the distance between the first and second top side corners. Further, the pouch is preferably symmetrical about a longitudinal axis extending from a midpoint of the top edge of the neck to a
midpoint of the base. In a particularly preferred embodiment, the pouch is one of a plurality of similar pouches, and each one of the pouches is in a complementary fashion one to another during the pouch formation process, such that one of the first and second top side edges of the neck of a first pouch is adjacent to one of the first and second lower body side edges of the body of a second pouch.

[0043] Typically, the sheeted material is chosen from the group consisting of polyethylene, polypropylene, polyester, polyvinyl chloride, aluminum foil, aluminum metallized film, and combinations thereof and therebetween.

[0044] In one embodiment, the sheeted material forming the inside surfaces of the pouch is polyethylene, and the sheeted material forming the outside surfaces of the pouch is polyester.

[0045] In one embodiment of the invention, the pouch is preferably extruded in such a manner that the pouch has a crosswise grain.

[0046] Typically, but not necessarily, the pouches of the present invention have at least one notch along one of the first and second neck side edges so as to facilitate tearing of the neck to access the liquid contained therein.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0047] The novel features which are believed to be characteristic of the present invention, as to its structure, organization, use and method of operation, together with further objectives and advantages thereof, will be better understood from the following drawings in which a presently preferred embodiment of the invention will now be illustrated by way of example. It is expressly understood, however, that the drawings are for the purpose of illustration and description only and are not intended as a definition of the limits of the invention. Embodiments of this invention will now be described by way of example in association with the accompanying drawings in which:

[0048] FIG. 1 is a front view of a first embodiment of a pouch in keeping with the present invention, when the filled pouch is in an upright position and is resting on a supporting surface;

[0049] FIG. 2 is a side view of a first embodiment of a pouch in keeping with the present invention, when the filled pouch is in an upright position and is held by a consumer;

[0050] FIG. 3 is a front view of a first embodiment of a pouch in keeping with the present invention, when the pouch is in an empty, flattened condition;

[0051] FIG. 4 is a perspective bottom view of a first embodiment of a pouch in keeping with the present invention, when the pouch is in an upright position, supported on its base;

[0052] FIG. 5 is a front view of a second embodiment of a pouch in keeping with the present invention, when the pouch is in an empty, flattened condition;

[0053] FIG. 6 is a front view of a third embodiment of a pouch in keeping with the present invention, when the pouch is in an empty, flattened condition;

[0054] FIG. 7 is a front view of a first embodiment of a plurality of pouches in keeping with the present invention, when the pouches are in an empty, flattened condition;

[0055] FIG. 8 is a front view of a fourth embodiment of a plurality of pouches in keeping with the present invention, when the pouches are in an empty, flattened condition; and

[0056] FIG. 9 is a front view of a pouch in keeping with the present invention, when the filled pouch is squeezed by the consumer.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

[0057] The novel features which are believed to be characteristic of the present invention, as to its structure, organization, use and method of operation, together with further objectives and advantages thereof, will be better understood from the following discussion.

[0058] Turning first to FIGS. 1 and 2, a front view and a side view, respectively, of a first embodiment of a pouch 10 in keeping with the present invention are shown. Generally, the pouch 10 is formed of sheeted material and its purpose is to contain a liquid therein. In these two noted Figures, the pouch 10 is shown in its filled condition.

[0059] As seen more clearly in FIG. 2, the pouch 10 has first and second walls 12 and 14, respectively, which are formed by the sheeted material. Each of the first and second walls, 12 and 14, has peripheral edges 16 (identified twice in FIG. 2, with reference character 16a corresponding to the peripheral edges of first wall 12, and 16b corresponding to the peripheral edges of second wall 14, but collectively referred to hereafter as 16).

[0060] Referring briefly to FIG. 3, the pouch 10 in an empty, flattened condition is shown. The pouch 10 includes a body 18 which has a base 20, and first and second upper body sides edges 22 and 24 respectively, and first and second shoulders 26 and 28 respectively. Furthermore, the pouch has a neck 30 which is integrally formed with the body 18. The neck 30 has a top edge 32, and first and second neck side edges 34 and 36 respectively.

[0061] The body 18 further comprises first and second lower body side edges 40 and 42 respectively. The first and second body side edges 40 and 42 extend between the base 20 and the respective first and second upper body side edges 22 and 24, thus forming first and second base corners 44 and 46 respectively, and first and second body corners 48 and 50 respectively. The first and second lower body side edges 40 and 42 are angularly directed away from the base 20 such that the distance, identified as character d, in FIG. 3, between the first and second body corners 48 and 50, is greater than the distance, identified as character d2, between the first and second base corners 44 and 46.

[0062] The first and second shoulders 26 and 28 respectively extend inwardly from the respective first and second upper body side edges 22 and 24, and terminate at the neck 30. The neck 30 extends upwardly from the first and second shoulders 26 and 28. Thus, the pouch 10 generally has a broad base 20 and a narrow neck 30.

[0063] As particularly suggested in FIG. 1 in which the pouch 10 is shown in a filled condition, the pouch 10 further includes an internal reservoir 38 which is defined by the body 18 and the neck 30 between the walls 12 and 14, and above the base 20. The internal reservoir 38 is formed when the peripheral edges 16 of the first and second walls 12 and
14 are in an opposed relationship and are in contact each with the other. As seen in FIG. 1, the pouch 10 is sealed. The pouch is structured in such a manner that when the base 20 of the pouch 10 is in contact with a supporting surface, hydraulic pressure of the liquid exerted on the base 20 causes the first and second lower body side edges 40 and 42 to collapse, so as to stabilize the pouch 10 in an upright position. It is important to note that after the collapse of the first and second lower body side edges 40 and 42 as caused by hydraulic pressure HP of the liquid inside the pouch, the shape of the base 20 is an elongated, irregular hexagon, as shown in FIG. 4.

[0064] Typically, the pouch 10 is formed by heat sealing, heat-welding or ultrasonic bonding of the sheeted material. However, adhesives, crimping or any other suitable arrangements can alternatively be used as well to bond the sheeted material to one another, as is known to those skilled in the art.

[0065] In one aspect of the present invention, the pouch 10 is formed from the sheeted material in such a manner that at least one of the first and second upper body side edges 22 and 24, the top edge 32 of the neck 30, and the base 20, is a fold between the first and second walls 12 and 14 so as to be seamless. In another aspect of the present invention, the pouch 10 is formed from the sheeted material in the form of a tube such that the top edge 32 of the neck 30, and the base 20 are seamless.

[0066] Referring now to FIGS. 3, 5 and 6, pouches 10, 200 and 300 are shown in their empty, flattened condition. Pouches 200 and 300 generally have the same features as seen in pouch 10. Each of the pouches 10, 200 and 300 is symmetrical about a longitudinal axis, which is identified as character “I” in the figures. The longitudinal axis extends from a midpoint (mpm), of the top edge 32 of the neck to a midpoint (identified as mnb) of the base 20.

[0067] As previously discussed, the first and second lower body side edges 40 and 42 are angularly directed away from the base 20. Indeed, each of the first and second lower body side edges 40 and 42 typically forms an exterior angle, identified by character “a” in FIGS. 3, 5 and 6, between 50 to 70 degrees relative to the base 20 when the pouch is in an empty, flattened condition. As particularly suggested in FIG. 5 in which pouch 200 is shown in an empty, flattened condition, the exterior angle is between 55 to 65 degrees. In the preferred embodiment, the exterior angle is 60 degrees when the pouch is in an empty, flattened condition.

[0068] Moreover, the first and second lower body side edges 40 and 42 respectively are chosen from the group of geometric elements consisting of a straight line extending between the base 20 and the respective first and second upper body side edges 22 and 24, a curved line extending between the base 20 and the respective first and second upper body side edges 22 and 24, and a sawtooth extending between the base 20 and the respective first and second upper body side edges 22 and 24.

[0069] In FIG. 3, the first and second lower body side edges 40 and 42 of the pouch 10 are shown as curved lines. Indeed, such a curved line extending between the base 20 and the respective first and second upper body side edges 22 and 24 may be chosen from the group of curvilinear elements consisting of a portion of an ellipse, a portion of a parabola, a portion of a circle, and a portion of a hyperbola.

[0070] As can be seen in FIG. 5, the first and second lower body side edges 40 and 42 of pouch 200 are shown as straight lines. In FIG. 6, each of the first and second lower body side edges 40 and 42 of pouch 300 is represented by a sawtooth edge.

[0071] With reference to FIG. 6, it is important to note that the neck 30 has first and second top side edges 52 and 54 extending outwardly from the respective first and second neck side edges 34 and 36, forming first and second top side corners 53 and 55, such that the top edge 32 of the neck 30 defines a distance, identified as d1, less than the distance, identified as d2, between the first and second top side corners 53 and 55.

[0072] Turning now to FIG. 7, a plurality of pouches 10 is shown. Each one of the pouches is in a complementary fashion one to another such that the neck 30 of a first pouch 10a is adjacent to the body 18 of a second pouch 10b, and the body 18 of the first pouch 10a is adjacent to the neck 30 of the second pouch 10b. Typically, during the formation process of the pouches, heat seals are formed in such a manner that the relative lengths of the first and second upper body side edges 22 and 24, and the first and second neck side edges 34 and 36 are equal so that adjacent pouches are in a complementary fashion to one another. Still further, the heat seals are configured such that the geometry of the first and second lower body side edges 40 and 42 is also complementary to the geometry of the first and second top side edges 52 and 54 of the neck. Thus, limited waste sheeted material is produced during the pouch formation process. Although in a preferred embodiment, the pouches are in a complementary fashion to one another during the formation process, the pouches may also be produced in such a manner that the base 20 of adjacent pouches share a common edge. In this latter embodiment, the waste material produced after the formation of the pouches may be recycled.

[0073] As discussed previously, the first and second lower body side edges 40 and 42 are angularly directed away from the base 20 such that the distance between the first and second body corners 48 and 50, is greater than the distance between the first and second base corners 44 and 46. Furthermore, the exterior angle formed between each of the first and second lower body side edges 40 and 42 and the base is typically between 50 to 70 degrees when the pouch is in an empty, flattened condition. Due to these structural features of the pouch, the pouch can therefore assume a stable upright position when the pouch is filled and sealed, and supported by a surface, as shown in FIG. 1. It is important to note that when the pouch is filled and sealed, the weight of the liquid inside the pouch creates an indent in the region around the midpoint of each of the first and second lower body side edges 40 and 42. As a result, when the filled pouch is supported on a surface, each of the first and second lower body side edges 40 and 42 is folded at the indent, and is such that each of the first and second body corners 48 and 50 is outwardly located of the respective first and second base corners 44 and 46.

[0074] Not only does the geometry of the first and second lower body side edges 40 and 42 described above provide stability to the filled pouch in an upright position when resting on a supporting surface, the complementary geometry of the first and second neck side edges 34 and 36 of the neck also provides a “tear-away” tab 56 (FIG. 1). Indeed,
the wider portion of the neck 30 defined by the top edge 32, and the first and second neck side edges 34 and 36 gives the consumer a greater surface of the pouch to grab onto such that tearing of the tab is facilitated.

Further, in order for the consumer to open the pouch with ease to access the liquid contained therein, the pouch 10 has at least one notch 58 along one of the first and second neck side edges 34 and 36 so as to facilitate tearing of the neck 30 (FIG. 3). Thus, the pouch 10 may be easily opened without the use of scissors or any other auxiliary tools.

Referring now to FIG. 8, a plurality of pouches 400 is shown. Each one of the pouches is in a complementary fashion one to another. The structure of pouch 400 is similar to pouch 10, with the exception that pouch 400 does not have first and second shoulders 26 and 28, and that pouch 400 is asymmetrical. Pouch 400 has a long elongated body 18. Similar to pouch 10, the base 20 of pouch 400 is structured in the same manner that when the pouch 400 is filled, sealed and placed on a supporting surface, hydraulic pressure exerted by the liquid on the base 20 causes the first and second lower body side edges 40 and 42 to collapse, so as to stable pouch 400 in an upright position.

Typically, the sheeted material is chosen from the group consisting of polyethylene, polypropylene, polyester, polyvinyl chloride, aluminum foil, aluminum metallized film, and combinations thereof. As is known to those skill in the art, any suitable flexible, lightweight sheeted material material may be used. The sheeted material may be a single layer or multi-layer, extruded or co-extruded. Most importantly, the sheeted material should be suitable for contact with food materials.

In one embodiment of the present invention, the sheeted material forming the inside surfaces of the pouch is polyethylene, and the sheeted material forming the outside of the pouch is polyester.

In another embodiment of the present invention, the pouch is extruded in such a manner that the pouch has a crosswise grain. Thus, the lines of weakness of the pouch are formed in a crosswise direction.

As best seen in FIGS. 1 and 2, when the filled pouch is in an upright position and no external pressure is applied to the body 18 of the pouch 20, the liquid which is inside the pouch resides in the body 18, and the neck 30 remains deflated. However, when external pressure is applied to the body 18 of the pouch, as shown in FIG. 9, the liquid inside the body flows into the neck 30, and thus substantially inflating the neck 30.

Other modifications and alterations may be used in the design and manufacture of the apparatus of the present invention without departing from the spirit and scope of the accompanying claims.

Throughout this specification and the claims which follow, unless the context requires otherwise, the word “comprise”, and variations such as “comprises” or “comprising”, will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not to the exclusion of any other integer or step or group of integers or steps.

What is claimed is:

1. A pouch formed of sheeted material for use to contain a liquid, said pouch comprising:
   first and second walls formed by said sheeted material, each wall having peripheral edges;
   a body having a base, and first and second upper body side edges, and first and second lower body side edges;
   a neck integrally formed with said body, said neck having a top edge, and first and second neck side edges; and
   an internal reservoir defined by said body and said neck between said walls and above said base;
   wherein said first and second lower body side edges extend between said base and said respective first and second upper body side edges, forming first and second base corners and first and second body corners, respectively, and wherein said first and second lower body side edges are angularly directed away from said base such that the distance between said first and second body corners is greater than the distance between said first and second base corners; and
   wherein said internal reservoir is formed when said peripheral edges of said first and second walls are in an opposed relationship and are in contact each with the other;
   whereby when said internal reservoir of said pouch is filled with a liquid and said pouch is sealed, said pouch stands on said base on a supporting surface, and is stable in an upright position.

2. The pouch of claim 1, wherein said pouch is formed from said sheeted material such that at least one of said first and second upper body side edges, said top edge of said neck, and said base, is a fold between said first and second walls so as to be seamless.

3. The pouch of claim 2, wherein said pouch is formed from said sheeted material in the form of a tube such that said top edge of said neck and said base are seamless.

4. The pouch of claim 1, wherein said body further comprises first and second shoulders which extend inwardly from said respective first and second upper body side edges and terminate at said neck, and wherein said neck extends upwardly from said first and second shoulders.

5. The pouch of claim 1, wherein said pouch is symmetrical about a longitudinal axis extending from a midpoint of said top edge of said neck to a midpoint of said base.

6. The pouch of claim 4, wherein said pouch is symmetrical about a longitudinal axis extending from a midpoint of said top edge of said neck to a midpoint of said base; and
   wherein said pouch is one of a plurality of similar pouches, and each one of said pouches is in a complementary fashion one to another during the pouch formation process, whereby said neck of a first pouch is adjacent to said body of a second pouch, and said body of said first pouch is adjacent to said neck of said second pouch.

7. The pouch of claim 1, wherein said first and second lower body side edges are angularly directed away from said base in such a manner that each of said first and second lower body side edges forms an exterior angle between 50 to 70 degrees relative to said base when said pouch is in a flattened empty condition.
8. The pouch of claim 7, wherein said exterior angle is between 55 to 65 degrees when said pouch is in a flattened empty condition.

9. The pouch of claim 8, wherein said exterior angle is 60 degrees when said pouch is in a flattened empty condition.

10. The pouch of claim 1, wherein said first and second lower body side edges are chosen from the group of geometric elements consisting of a straight line extending between said base and said respective first and second upper body side edges, a curved line extending between said base and said respective first and second upper body side edges, and said respective first and second upper body side edges.

11. The pouch of claim 10, wherein said first and second lower body side edges are curved lines, and wherein said curved line is chosen from the group of curvilinear elements consisting of a portion of an ellipse, a portion of a parabola, a portion of a circle, and a portion of a hyperbola.

12. The pouch of claim 1, wherein said neck additionally comprises first and second top side edges extending outwardly from said respective first and second neck side edges to said top edge of said neck, forming first and second top side corners, such that said top edge of said neck defines a distance less than the distance between said first and second top side corners.

13. The pouch of claim 12, wherein said pouch is symmetrical about a longitudinal axis extending from a midpoint of said top edge of said neck to a midpoint of said base; and wherein said pouch is one of a plurality of similar pouches, and each one of said pouches is in a complementary fashion one to another during the pouch formation process, whereby one of said first and second top side edges of said neck of a first pouch is adjacent to one of said first and second lower body side edges of said body of a second pouch.

14. The pouch of claim 1, wherein said sheeted material is chosen from the group consisting of polyethylene, polypropylene, polyester, polyvinyl chloride, aluminum foil, aluminium metallized film, and combinations thereof and therebetween.

15. The pouch of claim 14, wherein said sheeted material forming the inside surfaces of said pouch is polyethylene, and said sheeted material forming the outside surfaces of said pouch is polyester.

16. The pouch of claim 14, wherein said pouch is extruded in such a manner that said pouch has a crosswise grain.

17. The pouch of claim 1, wherein said pouch has at least one notch along one of said first and second neck side edges so as to facilitate tearing of said neck to access the liquid contained therein.

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