FLEXIBLE-ROUND STAND-UP POUCH

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ABSTRACT

A thin, heat-sealable packaging material is formed into an open cylindrical pouch having a recessed, round or oval base, similar to the base on paper cups. After filling, the opening of the pouch can be sealed to itself with heat and pressure using known techniques. The innovative design utilizes known technologies to form a stand-up heat-sealable pouch.
FLEXIBLE-ROUND STAND-UP POUCH

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field

[0002] The present invention relates to product packaging and more particularly to providing packaging of a product, such as a snack food, in a stand-up pouch.

[0003] 2. Description of Related Art

[0004] Pouch Packaging

[0005] Many snack foods, like chips, pretzels, etc., are packaged in pouches formed of very thin packaging films. This method of packaging is best described in conjunction with a description of the vertical form, fill, and seal packaging machine that makes and fills the pouches, seen diagrammatically in FIG. 1. Packaging film 110 is taken from a roll 112 of film and passed through tensioners 114 that keep it taut. The film then passes over a former 116, which directs the film into a vertical tube around a product delivery cylinder 118. As the tube is pulled downward by drive belts 120, the vertical tube of film is sealed along its length by a vertical sealer 122, forming a back seal 124. The machine then applies a pair of heat-sealing jaws 126 against the tube to form a transverse seal 128. This transverse seal 128 acts as the top seal on the bag 130 below the sealing jaws 126 and the bottom seal on the bag 132 being filled and formed above the jaws 126. After the transverse seal 128 has been formed, a cut is made across the sealed area to separate the finished bag 130 below the seal 128 from the partially completed bag 132 above the seal. The film tube is then pushed downward to draw out another package length. Before the sealing jaws form each transverse seal, the product to be packaged is dropped through the product delivery cylinder 118 and is held within the tube above the transverse seal 128.

[0006] The material used in this type packaging is typically a packaging film, such as polypropylene, polyester, paper, polyethylene extrusions, adhesive laminates, and other such materials, or a layered combination of the above. For many food products, where flavor retention is important, a metallized layer will form the innermost layer.

[0007] One problem with this type of packaging is that the pouches will not stand up by themselves, but tend to fall over on their sides unless they are supported. This can create difficulties in storage, both for the seller and the consumer. Despite this drawback, this packaging method has remained popular, as it is a very cost effective means of packaging.

[0008] Paper Cups

[0009] In a different area, paper cups and paper containers have been known for many years, although innovations to the process continue to the present. An overview of one method of forming a paper cup will now be discussed, but further details are available in many patents, such as U.S. Pat. Nos. 4,452,596 and 6,264,100, which are both hereby incorporated by reference. FIG. 2 shows a wall blank 210 and a circular base blank 212 that have been cut out of paperboard to use in forming a basic paper cup. FIG. 3A shows a first step during manufacture, where the wall blank 210 is wound around a tapering mandrel 380, then the ends are secured with an adhesive to form the tapering tube 310 with seam 311. In a separate step, a piston forces the base blank 212 through an opening having a smaller diameter than the blank itself, forming a rim or short, cylindrical edge 314 that projects at a right angle to the circular base, as seen in FIG. 3B. The formed base 312 is then inserted into the bottom of the now-sealed tube 310. As seen in FIG. 3C, the rim of the base section 312 can be positioned slightly above the lower edge 316 of the wall section 310. Finally, the lower edge 316 of the wall section is crimped over the rim 314 of the base section 312 and sealed with an adhesive to form the reinforced rim 318, as seen in FIG. 3D. Most cups will have the top edge 320 of the cup rolled in an early step to form a thicker lip for the cup, although that step is not shown here. This basic manufacturing process can be modified, of course, to provide additional improvements, such as a handle or a sealant/coating for the paperboard to prevent wetting of the cup by its contents, and a lid can be made separately if it is desired, such as when the cup will be used to transport hot soup or a similar liquid. These containers, unlike the pouch containers, have round bottoms, which give them a stable base on which they can sit. However, to ensure that the container will not collapse on itself and spill its contents, these containers are generally made of paperboard, and often they are treated with coatings or sealants to make them impervious to liquids. The result is a container that is heavier and more expensive than those used to package snack foods.

[0010] It would be desirable to find a method of packaging a product, such as a snack food, in an inexpensive container that would stand up and that could be formed out of less expensive, lightweight packaging materials.

SUMMARY OF THE INVENTION

[0011] In the present invention, a package is formed having a rounded, recessed base, similar to the base on paper cups. The recessed base can be round or generally oval, while the sidewalls are preferably straight, rather than tapering, as do the sides of a paper cup. In the place of paperboard, thin packaging polymers are utilized, such as those packaging materials that are currently used in forming pouches for snack foods. The formed packages are filled with a product and opposite edges of the open walls are brought into close proximity for heat sealing.

[0012] A major advantage of the innovative package is that the round or oval base allows the package to be stored upright on a shelf without further support, maintaining its upright position even when filled with light-weight products. Unlike prior packages with rounded bases, it is not necessary to use a heavy paperboard to hold the shape, so the cost is reduced. The materials for the package have been used for years, so they are well understood and well suited to food products. The size of the packages can be easily modified, so that, for example, a snack package can be sized to fit into the cup holders in an automobile. This pouch can be used for eating out of the container; for example, if used for packaged cereal, milk can be added directly to the pouch. Likewise, chips could be packaged in this pouch, with a cheese topping to be added before eating. Finally, this pouch has the potential for storing liquid products and can also be used in vending machines.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The novel features believed characteristic of the invention are set forth in the appended claims. The invention
itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will be best understood by reference to the following detailed description of illustrative embodiments when read in conjunction with the accompanying drawings, wherein:

[0014] FIG. 1 is a diagrammatic view of a form, fill, and seal machine, known in the prior art.

[0015] FIG. 2 shows blanks for the sidewall and base of a paper cup.

[0016] FIG. 3A shows the formed walls of a paper cup, while FIG. 3B shows the formed base of the cup. FIG. 3C shows the base and sides as they are first fitted together and FIG. 3D shows the base of the container after the two pieces have been sealed together.

[0017] FIG. 4A shows the blanks used to form an embodiment of the disclosed packaging, FIGS. 4B and 4C show the formed base and the formed sidewalls respectively of the package. FIGS. 4D and 4E show respectively the sidewalls and base of the package sealed together and the filled package after sealing.

[0018] FIGS. 5A-D show the disclosed package at various stages as it is being filled with product and sealed.

DETAILED DESCRIPTION

[0019] The invention will now be described with reference to FIGS. 4-5, which depict an exemplary embodiment.

[0020] FIG. 4A shows blanks 410, 412 for an embodiment of the innovative package. The wall blank 410 is preferably rectangular in shape and has a length slightly greater than the desired finished height and a width appropriate to the base to which it will attach. The base blank 412 is round or generally oval in shape to accommodate the processing method and to form a stable base for the package. The packaging material from which the blanks are cut can be any of the popular packaging films now used in pouch manufacture. Examples are polypropylene, polyester, paper, polyolefin extrusions, adhesive laminates, and other such materials, or layered combinations of the above. Where flavor retention is important, a metalized layer will form the innermost layer. In the presently preferred embodiment, one of the following laminations is used: 1) a metallic oriented polypropylene layer on the inside having an exposed sealant layer that is heat activated, followed by a polyethylene layer, an ink layer, and an outer oriented polypropylene layer; 2) a metallic polyethylene terephthalate (PET) inner layer having an exposed sealant layer, followed by a polyethylene layer, an ink layer, and an oriented polypropylene layer on the outside; and 3) a metallic oriented polypropylene inner layer with an adhesive, followed by a polyethylene layer, a paper layer and ink.

[0021] The two blanks 410, 412 are shaped in much the same manner as in paper cup manufacture. FIG. 4B shows the base blank 412 after rim 414 has been formed on this piece. In this figure, the upper and outer surfaces of the base include a sealant layer. In FIG. 4C, the sidewall blank 410 has been formed into a cylindrical shape and sealed at back seal 414. The back seal 414 can be formed as either an overlap seal or a fin seal and will be sealed by a pair of heat sealing jaws.

[0022] FIG. 4D shows an embodiment of the disclosed package 400, after the sides and base have been joined. In this embodiment, the lower edge of rim 414 of base 412 has been positioned to coincide with the lower edge of sidewall 410, and the two pieces 410, 412 have been heat sealed to each other. In an alternate embodiment, rim 414 of base 412 is positioned slightly above the lower edge of sidewall 410, then the lower edge of sidewall 410 is folded over so that rim 414 is enclosed between two layers of sidewall 410. This embodiment would give a somewhat sturdier rim to the base. In FIG. 4E, the package 400 has been filled with a product and a top seal 420 formed using heat sealing by a pair of opposed jaws. Dwell times for the formation of the heat seals on the base of the package would generally be in the 0.5-1.0 second range, while the back and top seals would typically have a dwell time of 0.1-0.5 seconds.

[0023] FIGS. 5A-D show a diagram of one embodiment of the innovative packages being filled and sealed. In FIG. 5A, empty package 500 has been formed and is ready to be filled. Since the package can maintain an upright position, no support is necessary as it is being filled and sealed. FIG. 5B shows the package as it is being filled with a product, in this example, tortilla chips, one of the many products suitable for this type of packaging. In FIG. 5C, the product is in the package 500, and sealing jaws 520 are preparing to bring the sides of the package 500 together so that they can be heat sealed. In this diagram, only the jaw facings themselves are shown, but one of ordinary skill in the art would recognize the machinery this represents. In FIG. 5D, the final package 500 has top seal 510 and is ready for boxing and shipping to the retailer.

[0024] In the presently preferred embodiment, containers are made outside of the packaging plant and shipped, preferably in a nested formation, for filling and sealing in the plant. Alternatively, the equipment to make the bags could replace an existing packaging machine, so that the newly manufactured bags could immediately be filled with product and sealed.

[0025] The disclosed packaging is a novel combination of two technologies—the technology of making paperboard into a cup or container and the technology of packaging snack foods into thin-walled, inexpensive pouches. This novel package provides a simple, economical container that stands upright, yet is sturdy enough to use in storing many different lightweight products, including foods.

[0026] While the invention has been particularly shown and described with reference to a preferred embodiment, it will be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention.

What is claimed is:
1. A package containing a product, said package comprising:
   a sidewall formed from a flexible packaging material that is heat sealable to itself; and
   a substantially round or oval shaped base formed from said flexible packaging material, said base being attached to a first edge of said sidewall;
   wherein said sidewall is sealed to itself at a first seal that is substantially perpendicular to the plane of the base
and at a second seal that is remote from said base and substantially perpendicular to said first seal.

2. The package of claim 1, wherein said base is recessed from a lower edge of said sidewall.

3. The package of claim 1, wherein a portion of said base is enclosed between two layers of said flexible packaging material that form said sidewall.

4. The package of claim 1, wherein said flexible packaging material comprises polypropylene, polyester, paper, polyolefin extrusions, adhesive laminates, metalized layers or a layered combination of the above.

5. A method of packaging a product, said method comprising the steps of:

   providing a pouch having a substantially round or oval base and sidewalls, wherein a rim of said base is sealed to said sidewalls;
   
   filling said pouch with the product;
   
   after said filling step, sealing opposite sides of said sidewalls together using heat and pressure.

6. A package, comprising:

   a substantially round or oval base, wherein said base is formed from a non-paperboard packaging material that is heat sealable to itself; and
   
   sidewalls formed from said non-paperboard packaging material;
   
   wherein said base and said sidewalls are heat sealed to each other along a rim of said base.

7. The pouch of claim 6, wherein said flexible packaging material comprises polypropylene, polyethylene, polyester, paper, polyolefin extrusions, adhesive laminates, or a layered combination of the above.

8. The pouch of claim 6, wherein a portion of said base is enclosed between first and second layers of said sidewalls.

9. The pouch of claim 6, wherein said sidewalls meet said base at a substantially normal angle.

10. A method, comprising the steps of:

    - cutting a base piece and a sidewall piece from a non-paperboard packaging material that is heat sealable to itself;
    - forming and scaling said sidewall piece into a tube;
    - forming a rim on said base piece that projects substantially 90 degrees from the remainder of said base piece; and
    - sealing said rim of said base piece to an end of said tube to form an open package.

11. The method of claim 10, wherein said step of forming a rim comprises forcing said base piece through an opening that is small in diameter than said base piece.

12. The method of claim 10, wherein said cutting step cuts a base piece having a circular or oval shape.

13. The method of claim 10, further comprising the steps of:

    - filling said open package with a product; and
    - sealing an opening of said open package using heat and pressure.


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