



US 20060120635A1

(19) **United States**

(12) **Patent Application Publication**

Su

(10) **Pub. No.: US 2006/0120635 A1**

(43) **Pub. Date: Jun. 8, 2006**

(54) **SQUARE BOTTOMED PLASTIC BAG AND METHOD OF MAKING SAME**

Publication Classification

- (51) **Int. Cl.**
 - B65D 30/12* (2006.01)
 - B65D 33/10* (2006.01)
 - B65D 33/08* (2006.01)
 - B65D 30/00* (2006.01)
 - B65D 33/01* (2006.01)
 - B65D 30/20* (2006.01)
 - B65D 30/16* (2006.01)
- (52) **U.S. Cl.** **383/126**; 383/120; 383/102; 383/8; 383/10; 383/9; 383/37; 383/104

(76) Inventor: **Frank Su**, Cerritos, CA (US)

Correspondence Address:
BELASCO, JACOBS & TOWNSLEY LLP
HOWARD HUGHES CENTER
6100 CENTER DRIVE
SUITE 630
LOS ANGELES, CA 90045 (US)

(21) Appl. No.: **11/361,246**

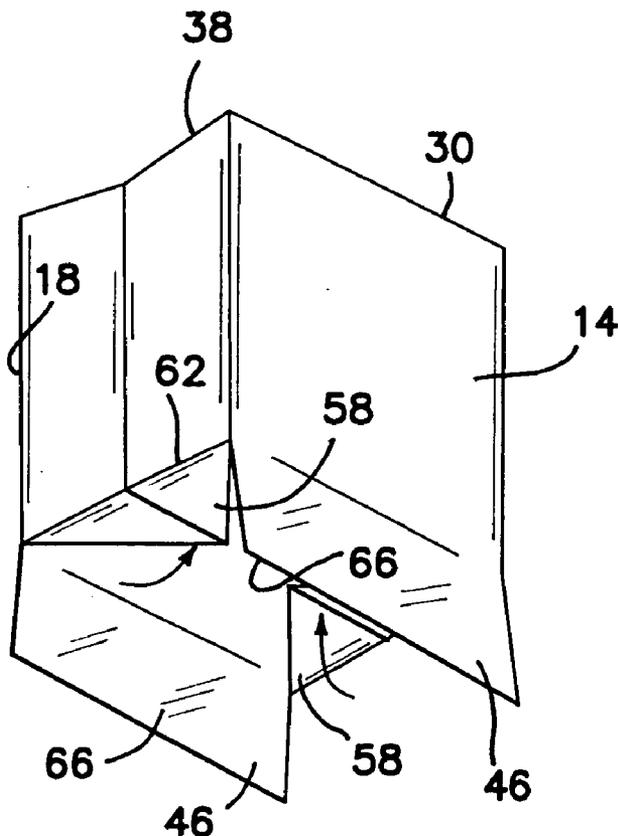
(22) Filed: **Feb. 24, 2006**

Related U.S. Application Data

(60) Continuation of application No. 11/058,637, filed on Feb. 15, 2005, which is a division of application No. 10/779,501, filed on Feb. 13, 2004, now Pat. No. 6,942,100.

(57) **ABSTRACT**

A square bottom plastic bag is designed to stand upright when opened. The bags are constructed with open tops, side gussets, side handle openings or with t-shirt style handles. The t-shirt bags may have apertures through the handles to suspend the bags on a rack. The bags may have detachable or rupturable center tabs. The bags may have openings, microperforations, or are formed of porous material to dissipate heat or moisture. The bags are formed from a flattened gusseted tube of polyethylene cut into bag blanks of a selected length. The blank is slit upwardly from its lower end and portions of the front and back panels and side gussets are folded and sealed to form a square, flat bag bottom.



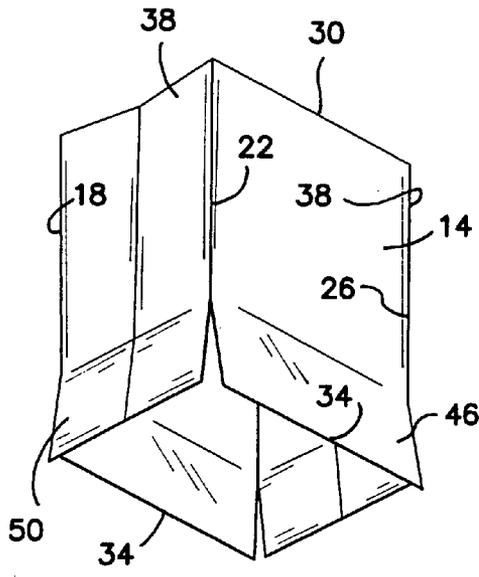


FIG. 1

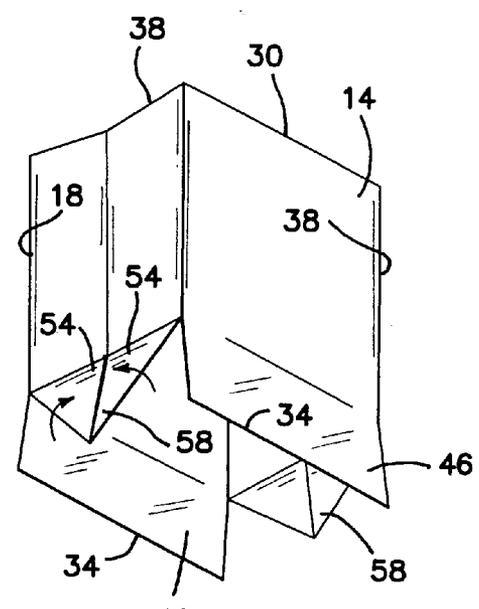


FIG. 2

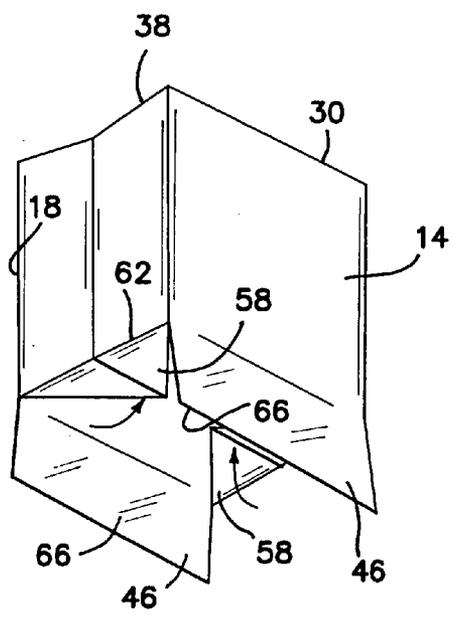


FIG. 3

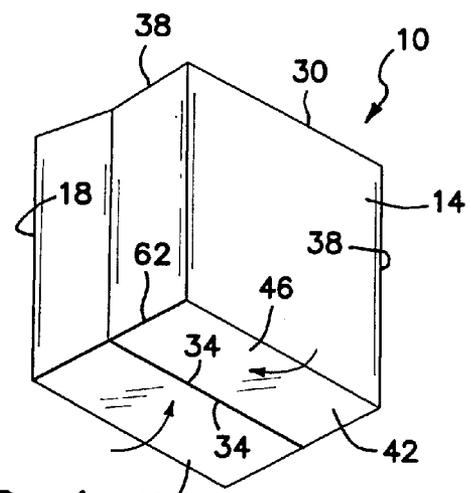


FIG. 4

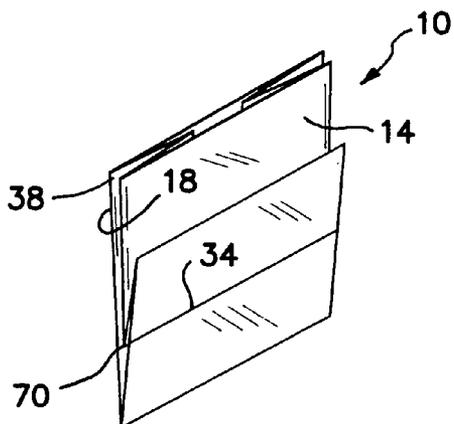


FIG. 5

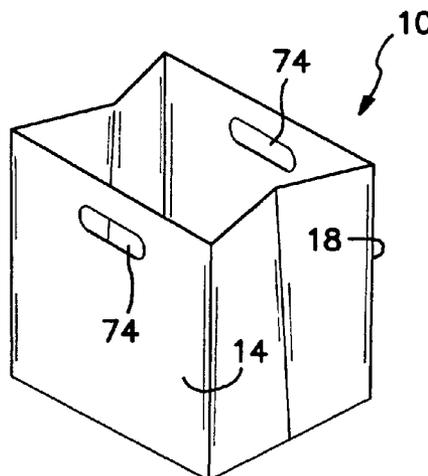


FIG. 6

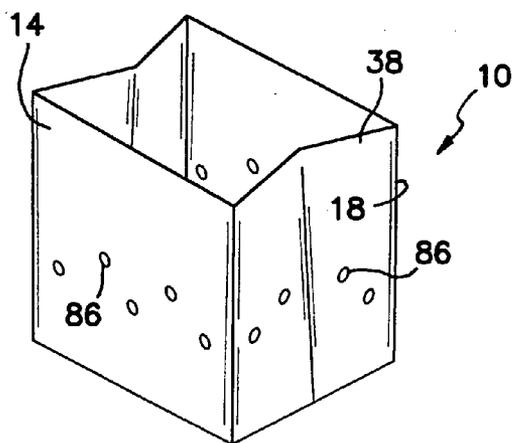


FIG. 7

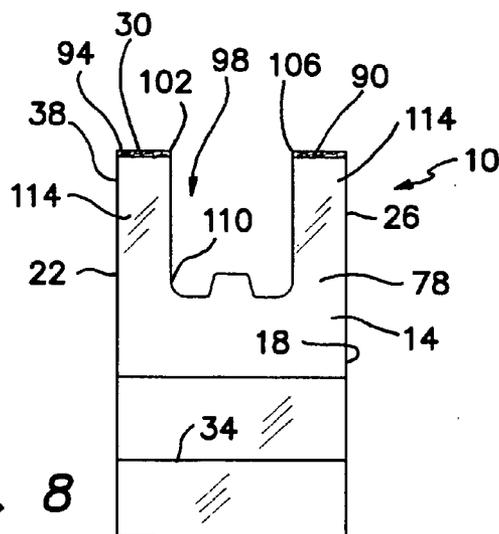


FIG. 8

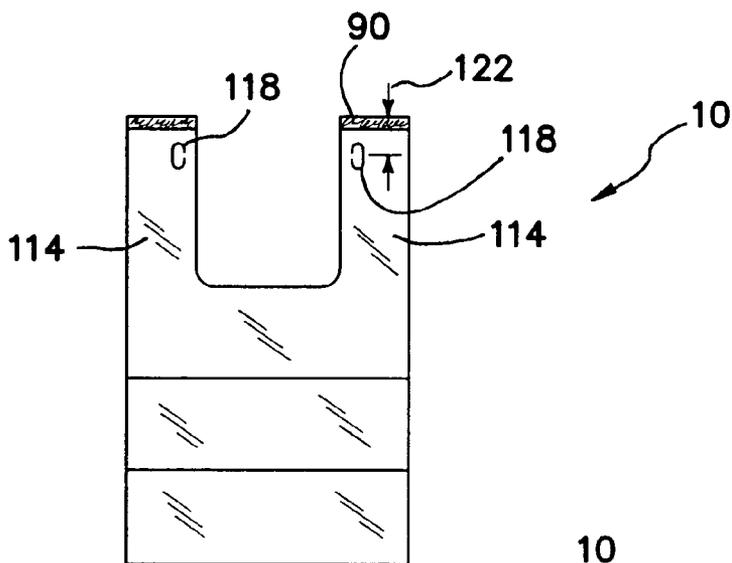


FIG. 9

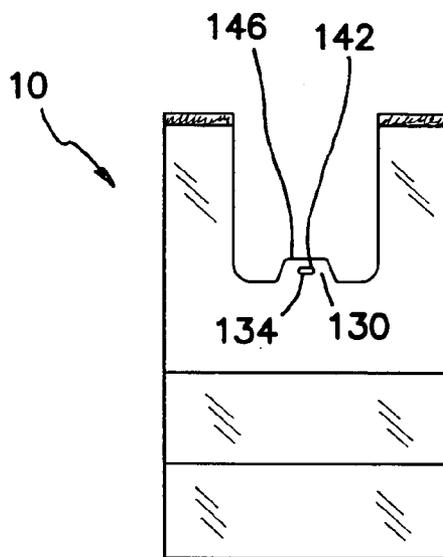


FIG. 11

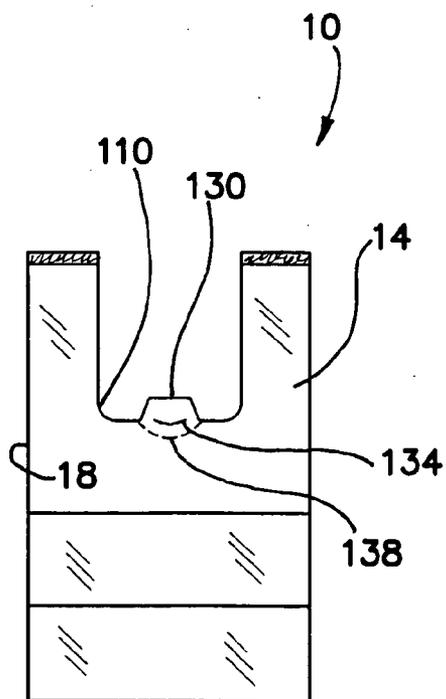


FIG. 10

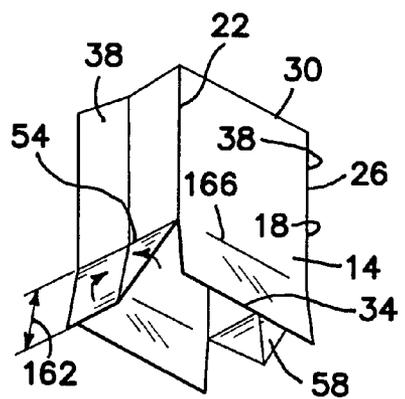
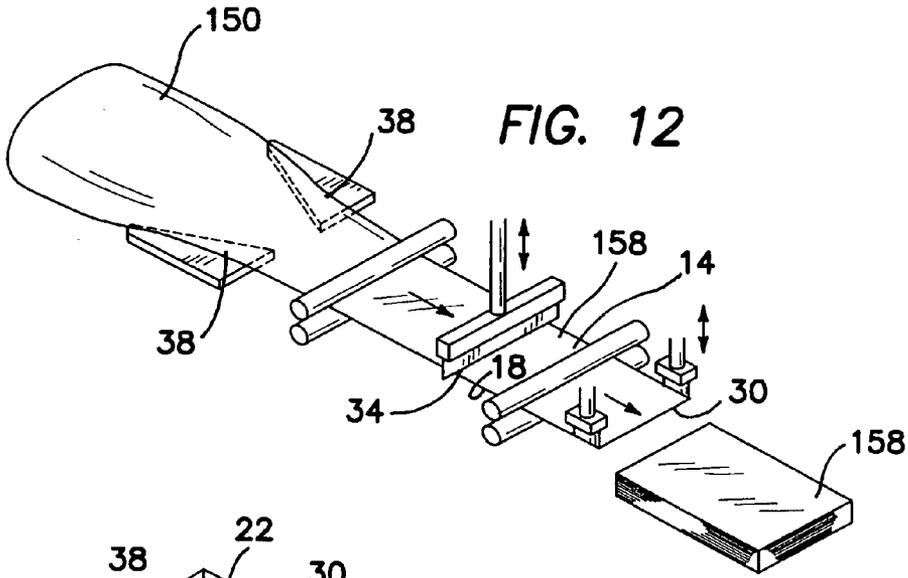


FIG. 13

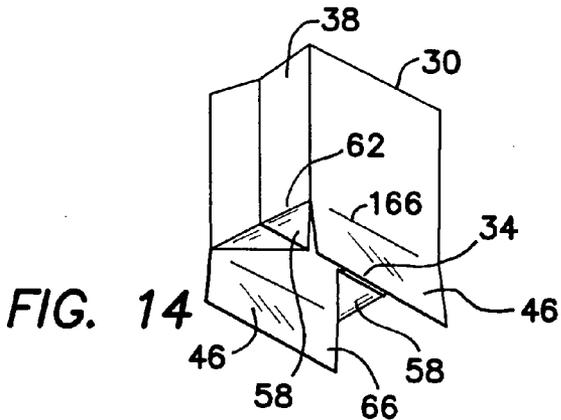


FIG. 14

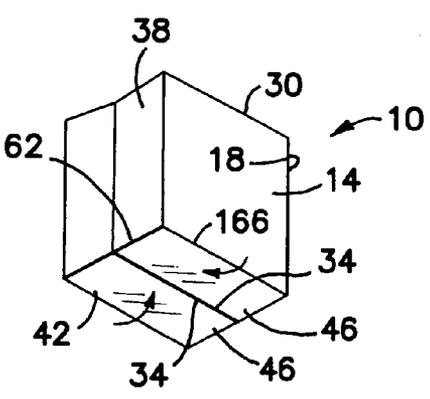


FIG. 15

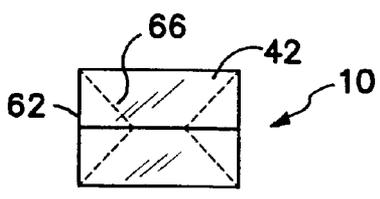


FIG. 16

SQUARE BOTTOMED PLASTIC BAG AND METHOD OF MAKING SAME

RELATED APPLICATIONS

[0001] The instant application is a Continuation of Divisional application Ser. No. 11/058,637, filed Feb. 15, 2005, of U.S. patent application Ser. No. 10/779,501, filed Feb. 13, 2004. No new matter has been added.

FIELD OF INVENTION

[0002] The invention pertains to plastic bags and methods of manufacturing them. More particularly, the invention relates to square bottomed bags with t-shirt bag style handles.

BACKGROUND OF THE INVENTION

[0003] Plastic bags have replaced paper bags for many applications in recent years based upon the ease and economics with which they can be manufactured. However, at present, paper bags are still favored for certain applications. Paper bags can easily be constructed with a completely flat bottom and can be made to stand up without a supporting rack both when empty and when filled. Also, paper bags tend to be somewhat porous and "breathable" and thus more desirable for use with items such as hot food products. For these reasons, paper bags have dominated such industries as fast food delivery and other applications in which it is important to be able to easily position articles within the bag. Paper bags, on the other hand, have other problems. For example, strong handles are not easily attached to paper bags, the bags become weakened with moisture, they are heavy, bulky and require wood as raw material. Plastic bags, on the other hand, are more durable, more compact and light weight, stronger, impervious to moisture and can easily be made with strong handles.

[0004] Various designs have been developed in attempts to provide a practical, breathable, square bottomed plastic bag that will stand up when opened for filling and remain upright when filled. U.S. Pat. No. 6,286,681 issued to Wilfong, Jr. et al. is directed to a ventilated plastic bag embodying closely spaced micro-perforations that extend through the wall sections to provide ventilation to the interior food carrying area. These perforations allow the bag to be used for carrying hot food items without weakening the strength regions of the bag. The closed bottom area of the bag may be formed by heat-sealing of the film material, but may also include corner or angle seals to define a square bottom on the bag.

[0005] U.S. Application Publication No. 2002/0110290 by Gebhardt discloses a plastic bag with randomly placed arcuate vent pairs. The bags described in this publication are made from a plastic tubing or sheeting stock. The bag may also include a handle aperture and the bag may include square-bottomed seals on gusseted bags. In the preferred embodiment of the receptacle described, vents are cut into the material of the receptacle that can accommodate, store, and transport fresh hot foods to provide a breathable element desired for the bags.

[0006] U.S. Pat. No. 6,319,184 issued to DeMatteis is directed to an apparatus and process for producing cold seal in plastic bags. The bags described may be of a semi-flat-

bottom type and may have hand holes to form handles in the upper portion of the bags. U.S. Pat. No. 6,113,269 issued to DeMatteis discloses an automatic ventilating system for plastic bags. U.S. Pat. No. 6,095,687 issued to DeMatteis is directed to a flat bottomed plastic bag having a handle aperture. The bag described sits upright upon a bottom gusset.

[0007] U.S. Pat. No. 5,149,201 issued to Benoit discloses a bag structure of a thermoplastic film material comprising front and rear bag walls connected by side walls and having an open mouth top portion, said open mouth portion being characterized by having handles located at opposite end regions thereof, said handles being of two films as a result of being integral extensions of said front rear and gusseted side walls, said bag having a bottom wall planarily extensible so as to form a rectangle with at least no substantial excess film outside of the bulk volumetric capacity of said bottom region of said bag. This invention also provides a method and system for preparing flat bottom thermoplastic sacks comprising process steps and means for forming a tube of thermoplastic film, collapsing said tube while forming two oppositely disposed gussets therein, forming two pairs of diagonal sealed seams in the gussets, forming a transverse sealed seam across the tube along a line which includes the inboard ends of the diagonal seams and forming pre-weakened transverse lines closely adjacent to said transverse sealed seam or forming a severing line along this line, removing the four double triangular regions bounded by the diagonal seams, the transverse seams and the side edges of the tube and collecting the resulting structures either while still interconnected or by stacking the severed sacks. The final structure can have handles or it can be handleless.

[0008] U.S. Pat. No. 5,165,799 issued to Wood describes flexible square bottom bags which include side gusset panels having central inwardly oriented fin seams and which are sealed adjacent their lowermost corners to portions of the front and rear panels of the bags and wherein the entire width of the lowermost edges of the front and rear panels are sealed to thereby form bags having bottoms reinforced by triangular gusset seals at each corner and which have an outwardly oriented transverse bottom fin seam when erected.

[0009] U.S. Pat. No. 5,362,152 issued to Fletcher et al. describes a T-shirt type plastic bag adapted for carrying hot foods from fast food restaurants. The bag includes front and rear wall sections, gusseted side wall sections integrally connecting the front and rear wall sections together and means connecting the bottoms of the front, rear and gusseted side wall sections together to define a closed bottom. At least a part of the front and rear wall sections are open at the tops to define a mouth portion. Laterally spaced handles are integral with the front, rear and gusseted side wall sections and extend upwardly from opposed sides of the mouth portion. Apertures extend through at least one of the wall sections for providing a path for a venting air flow from the outside of the bag and through the inside of the bag when the bag is carrying hot food.

[0010] U.S. Pat. No. 5,102,384 issued to Ross et al. discloses a method of constructing a flat bottom in a plastic film tube having an open upper end, a closed lower end formed by a transverse seal, forward and rearward sides and a pair of opposing pleated sides that interconnect the for-

ward and rearward sides. The method includes the steps of releasably engaging a lower vacuum and a lower clamp with a transverse section of the rearward side of the tube to provisionally hold the transverse section. A lateral section of the forward side is gripped and raised by an upper vacuum and an upper clamp to expose a portion of the pleated sides such that first and second pockets are formed, respectively, in the sides. The sealed lower end is drawn toward the upper end to fold the tube along first and second transverse fold lines in the forward side, along a third transverse fold line in the transverse section of the rearward side, and along fourth and fifth fold lines, respectively, in the pleated sides such that the first and second pockets are located in the pleated sides, respectively between the first and third fold lines and the lower end of the bag. Pressure is applied to the tube to form creases along the first, third, fourth and fifth fold lines, which define the perimeter of the flat bottom of the tube.

[0011] U.S. Pat. No. 5,549,538 issued to Marsik describes a process for manufacturing a multi-ply square bottom bag having a front wall, a back wall, a pair of gusseted side walls, each of which join to said front and back walls. There is also formed a gusseted square bottom panel having spaced but substantially parallel gusset edges and said bottom is joined to the front, back and side walls. The bag is produced by providing a web of inner ply material and a web of outer ply material, adhesively joining said webs into a composite and forming said bag from said joined webs. The improvement relates to forming a first flap in the inner web by cutting the web so as to form a plurality of free edges and a hinge line for said flap. The hinge line is connected to the free edges so that the free edges and hinge line define the flap. Thereafter joining the inner and outer webs to form the composite web. The hinge line is generally transverse to the longitudinal axis of the web and the flap is formed in the inner web so as to be positioned adjacent the front wall and bottom wall with the hinge line at the junction thereof when said bag is formed and said flap is arranged to overlie the gusset edges in the bottom panel.

[0012] It is an objective of the present invention to provide a square bottomed bag with integral t-shirt style handles formed in an upper portion of the bag. It is a further objective to provide square bottomed bags that will remain upright when opened in filled or unfilled condition. It is a still further objective of the invention to provide a breathable or ventilated bag suitable for use with hot food or similar items. It is yet a further objective to provide bags that have the above-described features that are easily and inexpensively manufactured.

[0013] While some of the objectives of the present invention are disclosed in the prior art, none of the inventions found include all of the requirements identified.

SUMMARY OF THE INVENTION

[0014] The present invention addresses all of the deficiencies of prior art square bottom bag stack inventions and satisfies all of the objectives described above.

[0015] (1) A square bottomed plastic bag providing the desired features may be constructed from the following components. Front and rear polyethylene film walls are provided. Each of the front and rear walls have first and second side edges, a top edge and a bottom edge. The bag has a pair of longitudinally oriented side gussets attached to

the first and second side edges. The bag has a flat, rectangular bottom formed of lower portions of the front and rear walls and lower portions of the side gussets. Lower corners of the each side gusset are folded outwardly and together to form downward pointing triangular panels. The triangular panels are folded inwardly from the side gussets. Lower portions of the front and rear walls are folded inwardly and sealed together to form the bag bottom. The bag bottom is sealed to the side gussets adjacent upper edges of the triangular panels. The triangular panels are sealed to an upper surface of the bag bottom. When the bag is opened, it will stand erect upon the flat bottom.

[0016] (2) In a variant of the invention, the bag is folded inwardly at the side gussets and upwardly from either of the front wall and the rear wall at a point spaced upwardly from the bottom edge, to form a flattened bag.

[0017] (3) In a further variant, the square bottomed plastic bag further includes at least one handle opening. The handle opening extends through the front and rear walls in an upper portion of each of the bags.

[0018] (4) In still a further variant, the bags are formed of a porous material.

[0019] (5) In yet a further variant, the bags are formed of material has microperforations penetrating at least a portion of any of the bag walls and side gussets.

[0020] (6) In another variant of the invention, the bags have a plurality of ventilating openings penetrating at least a portion of any of the bag walls and side gussets.

[0021] (7) In still another variant, the bag includes an upper seal. The upper seal joins the front wall to the rear wall at the top edges of the bag walls and joins top edges of the side gussets. A U-shaped cutout is provided. The cutout commences at a first point on the upper seal spaced from the first side edge and extends downwardly toward the bottom edges, across an upper portion of the bag walls and upwardly to a second point on the upper seal spaced from the second side edge, thereby forming an open bag mouth and a pair of bag handles terminating at the upper seal.

[0022] (8) In yet another variant, the bag includes a pair of apertures. Each of the apertures penetrates the bag handles at a point spaced downwardly from the upper seal. The apertures permit the bag to be suspended from a dispensing rack.

[0023] (9) In still another variant, a central tab extends upwardly from at least one of the front wall and the rear wall at the open mouth. The central tab has an opening through it for suspending the bag from a dispensing rack.

[0024] (10) In a further variant, the central tab is attached to at least one of the front wall and the rear wall at the open mouth at a weakened area. The weakened area permits the central tab to be torn from the open mouth of the bag as the bag is removed from a dispensing rack.

[0025] (11) In still a further variant, the central tab includes a weakened area. The weakened area extends from the opening to an edge of the central tab. The weakened area parts under pressure as the bag is removed from a dispensing rack.

[0026] (12) A method of making a square bottomed plastic bag, includes the steps of: extruding a tube of thermoplastic

material. Forming side gussets in the tube and flattening same. Cutting the flattened tube perpendicular to the side gussets to a first predetermined length, thereby forming a bag blank. The bag blank has front and rear walls, front and rear top edges, front and rear bottom edges, first and second side edges. Slitting the bag blank at intersections of the side gussets and the front and rear walls from the front and rear bottom edges upwardly for a first predetermined distance. Folding lower corners of the each side gusset outwardly and together to form downward pointing triangular panels. Folding the triangular panels inwardly from the side gussets. Folding lower portions of the front and rear walls inwardly. Sealing the front and rear wall together adjacent the front and rear bottom edges to form a bag bottom. Sealing the bag bottom to the side gussets adjacent upper edges of the triangular panels. Sealing the triangular panels to an upper surface of the bag bottom.

[0027] (13) A variant of the method, includes the additional step of folding the bag inwardly at the side gussets and upwardly from either of the front wall and the rear wall at a point spaced upwardly from the bottom edge, to form a flattened bag.

[0028] (14) Another variant of the method includes the steps of: Extruding a tube of thermoplastic material. Forming side gussets in the tube and flattening same. Cutting the flattened tube perpendicular to the side gussets to a first predetermined length, thereby forming a bag blank. The bag blank has front and rear walls, front and rear top edges, front and rear bottom edges, first and second side edges. Forming a crease line in the bag blank. The crease line is parallel to the bottom edges and spaced upwardly from the bottom edges by approximately one half of a width of one of the side gussets. Slitting the bag blank from the bottom edges of the walls to the crease line at each intersection of the front and rear walls and the side gussets. Folding lower corners of the each side gusset outwardly to the crease line and together to form downward pointing triangular panels. Folding the triangular panels inwardly from the side gussets at the crease line. Folding lower portions of the front and rear walls inwardly from the crease line. Sealing the front and rear wall together adjacent the front and rear bottom edges to form a bag bottom. Sealing the bag bottom to the side gussets adjacent the crease line and upper edges of the triangular panels. Sealing the triangular panels to an upper surface of the bag bottom.

[0029] (15) Still another variant of the method includes the additional step of folding the bag blank inwardly at the side gussets and upwardly from either of the front wall and the rear wall at the crease line, to form a flattened bag.

[0030] (16) Yet another variant of the method includes the step of cutting at least one handle opening in the bag, the handle opening extending through the front and rear walls in an upper portion of the bag.

[0031] (17) A further variant of the method includes the step of forming the bag of a porous material.

[0032] (18) Yet a further variant of the method includes the step of forming microperforations penetrating at least a portion of any of the bag walls and side gussets.

[0033] (19) Still a further variant of the method includes the step of forming a plurality of ventilating openings penetrating at least a portion of any of the bag walls and side gussets.

[0034] (20) Another variant of the method includes the steps of: Joining the front wall to the rear wall at the top edges of the bag walls and joining top edges of the side gussets, thereby forming an upper seal. Forming a U-shaped cutout, the cutout commencing at a first point on the upper seal spaced from the first side edge and extending downwardly toward the bottom edges, across an upper portion of the bag walls and upwardly to a second point on the upper seal spaced from the second side edge, thereby forming an open bag mouth and a pair of bag handles terminating at the upper seal.

[0035] (21) Still another variant of the method includes the step of cutting a pair of apertures. Each of the apertures penetrates the bag handles at a point spaced downwardly from the upper seal. The apertures permit the bag to be suspended from a dispensing rack.

[0036] (22) Yet another variant of the method includes the step of forming a central tab. The central tab extends upwardly from at least one of the front wall and the rear wall at the open mouth. The central tab has an opening through it for suspending the bag.

[0037] (23) A further variant of the method includes the step of forming a weakened area. The weakened area attaches the central tab to at least one of the front wall and the rear wall at the open mouth. The weakened area permits the central tab to be torn from the open mouth of the bag as the bag is removed from a dispensing rack.

[0038] (24) In a final variant of the method includes the step of forming the central tab with a weakened area. The weakened area extends from the opening to an edge of the central tab. The weakened area parting under pressure as the bag is removed from a dispensing rack.

[0039] An appreciation of the other aims and objectives of the present invention and an understanding of it may be achieved by referring to the accompanying drawings and the detailed description of a preferred embodiment.

DESCRIPTION OF THE DRAWINGS

[0040] FIG. 1 is a perspective view of a gusseted open mouth bag blank formed from a section of gusseted tubing illustrating slitting of lower corners of the tube;

[0041] FIG. 2 is a perspective view of the FIG. 1 embodiment illustrating the outward folding of lower ends of the side gussets to form triangular portions;

[0042] FIG. 3 is a perspective view of the FIG. 1 embodiment illustrating the inward folding of the triangular portions of the bag blank;

[0043] FIG. 4 is a perspective view of the FIG. 1 embodiment illustrating a bag bottom formed from lower portions of the front and rear bag walls secured to each other and the ends of the side gussets;

[0044] FIG. 5 is a perspective view of the FIG. 1 embodiment illustrating the folding of the bag bottom along side the bag walls;

[0045] FIG. 6 is a perspective view of the FIG. 1 embodiment illustrating a bag with central handles;

[0046] FIG. 7 is a perspective view of the FIG. 1 embodiment illustrating a bag with ventilating openings penetrating at least a portion of the bag walls and side gussets;

[0047] FIG. 8 is a front elevational view of a t-shirt style square bottom bag with center tab;

[0048] FIG. 9 is a front elevational view of a second embodiment of a t-shirt style square bottom bag having hanging apertures in the handles;

[0049] FIG. 10 is a front elevational view of a fourth embodiment of a t-shirt style square bottom bag having a removable center tab joined to the bag with a frangible area;

[0050] FIG. 11 is a front elevational view of a third embodiment of a t-shirt style square bottom bag having a center tab with a weakened area between the tab opening and the edge of the bag mouth;

[0051] FIG. 12 is a perspective view of an apparatus for forming the bags of the FIG. 1 embodiment including gusseting and slitting the extruded tubing;

[0052] FIG. 13 is a perspective view of the method of folding the lower ends of the bag gussets outwardly to form triangular portions;

[0053] FIG. 14 is a perspective view of the method of folding the triangular portions inwardly as part of the bag bottom;

[0054] FIG. 15 a perspective view of the method of folding the front and rear bag walls over the triangular portions and fastening them to each other, the triangular portions and the side gussets to form the bag bottom;

[0055] FIG. 16 is a bottom side view of the assembled bag illustrating the bottom and side seams; and

[0056] FIG. 17 is a perspective view of a method of forming a gusseted t-shirt style bag as in the FIG. 21 embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0057] (1) As illustrated in FIGS. 1-4, a square bottomed plastic bag 10 providing the desired features may be constructed from the following components. Front 14 and rear 18 polyethylene film walls are provided. Each of the front 14 and rear 18 walls have first 22 and second 26 side edges, a top edge 30 and a bottom edge 34. The bag 10 has a pair of longitudinally oriented side gussets 38 attached to the first 22 and second 26 side edges. The bag 10 has a flat, rectangular bottom 42 formed of lower portions 46 of the front 14 and rear 18 walls and lower portions 50 of the side gussets 38. As illustrated in FIG. 2, lower corners 54 of the each side gusset 38 are folded outwardly and together to form downward pointing triangular panels 58. As illustrated in FIG. 3, the triangular panels 58 are folded inwardly from the side gussets 38. As illustrated in FIG. 4, lower portions 46 of the front 14 and rear 18 walls are folded inwardly and sealed together to form the bag bottom 42. The bag bottom 42 is sealed to the side gussets 38 adjacent upper edges 62 of the triangular panels 58. The triangular panels 58 are sealed to an upper surface 66 of the bag bottom 42. When the bag 10 is opened, it will stand erect upon the flat bottom 42.

[0058] (2) In a variant of the invention, as illustrated in FIG. 5, the bag 10 is folded inwardly at the side gussets 38 and upwardly from either of the front wall 14 and the rear wall 18 at a point 70 spaced upwardly from the bottom edge 34, to form a flattened bag 10.

[0059] (3) In a further variant, as illustrated in FIG. 6, the square bottomed plastic bag 10 further includes at least one handle opening 74. The handle opening 74 extends through the front 14 and rear 18 walls in an upper portion 78 of each of the bags 10.

[0060] (4) In still a further variant, the bags 10 are formed of a porous material 82.

[0061] (5) In yet a further variant, the bags 10 are formed of material has microperforations 84 penetrating at least a portion of any of the bag walls 14, 18 and side gussets 38.

[0062] (6) In another variant of the invention, as illustrated in FIG. 7, the bags 10 have a plurality of ventilating openings 86 penetrating at least a portion of any of the bag walls 14, 18 and side gussets 38.

[0063] (7) In still another variant, as illustrated in FIG. 8, the bag 10 includes an upper seal 90. The upper seal 90 joins the front wall 14 to the rear wall 18 at the top edges 30 of the bag walls 14, 18 and joins top edges 94 of the side gussets 38. A U-shaped cutout 98 is provided. The cutout 98 commences at a first point 102 on the upper seal 90 spaced from the first side edge 22 and extends downwardly toward the bottom edges 34, across an upper portion 78 of the bag walls 14, 18 and upwardly to a second point 106 on the upper seal 90 spaced from the second side edge 26, thereby forming an open bag mouth 110 and a pair of bag handles 114 terminating at the upper seal 90.

[0064] (8) In yet another variant, as illustrated in FIG. 9, the bag 10 includes a pair of apertures 118. Each of the apertures 118 penetrates the bag handles 114 at a point 122 spaced downwardly from the upper seal 90. The apertures 118 permit the bag 10 to be suspended from a dispensing rack 126.

[0065] (9) In still another variant, as illustrated in FIG. 10, a central tab 130 extends upwardly from at least one of the front wall 14 and the rear wall 18 at the open mouth 110. The central tab 130 has an opening 134 through it for suspending the bag 10 from a dispensing rack (not shown).

[0066] (10) In a further variant, the central tab 130 is attached to at least one of the front wall 14 and the rear wall 18 at the open mouth 110 at a weakened area 138. The weakened area 138 permits the central tab 130 to be torn from the open mouth 110 of the bag 10 as the bag 10 is removed from a dispensing rack.

[0067] (11) In still a further variant, as illustrated in FIG. 11, the central tab 130 includes a weakened area 142. The weakened area 142 extends from the opening 134 to an edge 146 of the central tab 130. The weakened area 142 parts under pressure as the bag 10 is removed from a dispensing rack 126.

[0068] (12) A method of making a square bottomed plastic bag 10, as illustrated in FIGS. 12-16, includes the steps of: extruding a tube of thermoplastic material 150. Forming side gussets 38 in the tube 150 and flattening same. Cutting the flattened tube 150 perpendicular to the side gussets 38 to a first predetermined length 154, thereby forming a bag blank 158. As illustrated in FIG. 13, the bag blank 158 has front 14 and rear 18 walls, front and rear top edges 30, front and rear bottom edges 34, first 22 and second 26 side edges. Slitting the bag blank 158 at intersections of the side gussets 38 and the front 14 and rear 18 walls from the front and rear

bottom edges **34** upwardly for a first predetermined distance **162**. As illustrated in **FIG. 14**, folding lower corners **54** of the each side gusset **38** outwardly and together to form downward pointing triangular panels **58**. Folding the triangular panels **58** inwardly from the side gussets **38**. As illustrated in **FIG. 15**, folding lower portions **46** of the front **14** and rear **18** walls inwardly. Sealing the front **14** and rear **18** wall together adjacent the front and rear bottom edges **34** to form a bag bottom **42**. Sealing the bag bottom **42** to the side gussets **38** adjacent upper edges **62** of the triangular panels **58**. Sealing the triangular panels **58** to an upper surface **66** of the bag bottom **42**.

[0069] (13) A variant of the method, as illustrated in **FIG. 5**, includes the additional step of folding the bag **10** inwardly at the side gussets **38** and upwardly from either of the front wall **14** and the rear wall **18** at a point **70** spaced upwardly from the bottom edge **34**, to form a flattened bag **10**.

[0070] (14) Another variant of the method, as illustrated in **FIGS. 12-16**, includes the steps of: Extruding a tube of thermoplastic material **150**. Forming side gussets **38** in the tube **150** and flattening same. Cutting the flattened tube **150** perpendicular to the side gussets **38** to a first predetermined length **154**, thereby forming a bag blank **158**. The bag blank **158** has front **14** and rear **18** walls, front and rear top edges **30**, front and rear bottom edges **34**, first **22** and second **26** side edges. Forming a crease line **166** in the bag blank **158**. The crease line **166** is parallel to the bottom edges **34** and spaced upwardly from the bottom edges **34** by approximately one half of a width **170** of one of the side gussets **38**. Slitting the bag blank **158** from the bottom edges **34** of the walls **14, 18** to the crease line **166** at each intersection of the front **14** and rear **18** walls and the side gussets **38**. Folding lower corners **54** of the each side gusset **38** outwardly to the crease line **166** and together to form downward pointing triangular panels **58**. Folding the triangular panels **58** inwardly from the side gussets **38** at the crease line **166**. Folding lower portions **46** of the front **14** and rear **18** walls inwardly from the crease line **166**. Sealing the front **14** and rear **18** walls together adjacent the front and rear bottom edges **34** to form a bag bottom **42**. Sealing the bag bottom **42** to the side gussets **38** adjacent the crease line **166** and upper edges **62** of the triangular panels **58**. Sealing the triangular panels **58** to an upper surface **66** of the bag bottom **42**.

[0071] (15) Still another variant of the method, as illustrated in **FIG. 5**, includes the additional step of folding the bag blank **158** inwardly at the side gussets **38** and upwardly from either of the front wall **14** and the rear wall **18** at the crease line **166**, to form a flattened bag **10**.

[0072] (16) Yet another variant of the method, as illustrated in **FIG. 6**, includes the step of cutting at least one handle opening **74** in the bag **10**, the handle opening **74** extending through the front **14** and rear **18** walls in an upper portion **78** of the bag **10**.

[0073] (17) A further variant of the method includes the step of forming the bag **10** of a porous material **82**.

[0074] (18) Yet a further variant of the method includes the step of forming microperforations **84** penetrating at least a portion of any of the bag walls **14, 18** and side gussets **38**.

[0075] (19) Still a further variant of the method, as illustrated in **FIG. 7**, includes the step of forming a plurality of

ventilating openings **86** penetrating at least a portion of any of the bag walls **14, 18** and side gussets **38**.

[0076] (20) Another variant of the method, as illustrated in **FIG. 17**, includes the steps of: Joining the front wall **14** to the rear wall **18** at the top edges **30** of the bag walls **14, 18** and joining top edges **94** of the side gussets **38**, thereby forming an upper seal **90**. Forming a U-shaped cutout **98**, the cutout **98** commencing at a first point **102** on the upper seal **90** spaced from the first side edge **22** and extending downwardly toward the bottom edges **34**, across an upper portion **78** of the bag walls **14, 18** and upwardly to a second point **106** on the upper seal **90** spaced from the second side edge **26**, thereby forming an open bag mouth **110** and a pair of bag handles **114** terminating at the upper seal **90**.

[0077] (21) Still another variant of the method includes the step of cutting a pair of apertures **118**. Each of the apertures **118** penetrates the bag handles **114** at a point **122** spaced downwardly from the upper seal **90**. The apertures **118** permit the bag **10** to be suspended from a dispensing rack.

[0078] (22) Yet another variant of the method includes the step of forming a central tab **130**. The central tab **130** extends upwardly from at least one of the front wall **14** and the rear wall **18** at the open mouth **110**. The central tab **130** has an opening **134** through it for suspending the bag **10**.

[0079] (23) A further variant of the method includes the step of forming a weakened area **138**. The weakened area **138** attaches the central tab **130** to at least one of the front wall **14** and the rear wall **18** at the open mouth **110**. The weakened **138** area permits the central tab **130** to be torn from the open mouth **110** of the bag **10** as the bag **10** is removed from a dispensing rack.

[0080] (24) In a final variant of the method, As illustrated in **FIG. 11**, includes the step of forming the central tab **130** with a weakened area **142**. The weakened area **142** extends from the opening **134** to an edge **146** of the central tab **130**. The weakened area **142** parting under pressure as the bag **10** is removed from a dispensing rack **126**.

1. A square bottomed plastic bag, comprising:

front and rear polyethylene film walls, each of said front and rear walls having first and second side edges, a top edge and a bottom edge;

each of said bags having a pair of longitudinally oriented side gussets attached to said first and second side edges;

each of said bags having a flat, rectangular bottom formed of lower portions of said front and rear walls and lower portions of said side gussets;

lower corners of said each side gusset being folded outwardly and together to form downward pointing triangular panels;

said triangular panels being folded inwardly from said side gussets;

lower portions of said front and rear walls being folded inwardly and sealed together to form the bag bottom;

said bag bottom being sealed to said side gussets adjacent upper edges of said triangular panels;

said triangular panels being sealed to an upper surface of said bag bottom; and

whereby, when said bag is opened, it will stand erect upon said flat bottom.

2. The square bottomed plastic bag as described in claim 1, wherein said bag is folded inwardly at said side gussets and upwardly from either of said front wall and said rear wall at a point spaced upwardly from said bottom edge, to form a flattened bag.

3. The square bottomed plastic bag as described in claim 1, further comprising at least one handle opening, said handle opening extending through said front and rear walls in an upper portion of each of said bags.

4. The square bottomed plastic bag as described in claim 1, wherein said bags are formed of a porous material.

5. The square bottomed plastic bag as described in claim 1, wherein said bags are formed of material having microporations penetrating at least a portion of any of said bag walls and side gussets.

6. The square bottomed plastic bag as described in claim 1, wherein said bags have a plurality of ventilating openings penetrating at least a portion of any of said bag walls and side gussets.

7. The square bottomed plastic bag as described in claim 1, wherein said bag further comprises:

an upper seal, said upper seal joining said front wall to said rear wall at said top edges of said bag walls and joining top edges of said side gussets; and

a U-shaped cutout, said cutout commencing at a first point on said upper seal spaced from said first side edge and extending downwardly toward said bottom edges, across an upper portion of said bag walls and upwardly to a second point on said upper seal spaced from said second side edge, thereby forming an open bag mouth and a pair of bag handles terminating at said upper seal.

8. The square bottomed plastic bag as described in claim 7, wherein said bag further comprise a pair of apertures, each of said apertures penetrating said bag handles at a point spaced downwardly from said upper seal, said apertures permitting said bag to be suspended from a dispensing rack.

9. The square bottomed plastic bag as described in claim 7, further comprising:

a central tab, said central tab extending upwardly from at least one of said front wall and said rear wall at said open mouth; and

said central tab having an opening therethrough for suspending said bag from a dispensing rack.

10. The square bottomed plastic bag stack as described in claim 7, wherein said central tab is attached to at least one of said front wall and said rear wall at said open mouth at a weakened area, said weakened area permitting said central tab to be torn from said open mouth of said bag as said bag is removed from a dispensing rack.

11. The square bottomed plastic bag stack as described in claim 10, wherein said central tab includes a weakened area, said weakened area extending from said opening to an edge of said central tab, said weakened area parting under pressure as said bag is removed from a dispensing rack.

12. A method of making a square bottomed plastic bag, comprising the steps of:

extruding a tube of thermoplastic material;

forming side gussets in said tube and flattening same;

cutting said flattened tube perpendicular to said side gussets to a first predetermined length, thereby forming a bag blank, said bag blank having front and rear walls, front and rear top edges, front and rear bottom edges, first and second side edges;

slitting said bag blank at intersections of said side gussets and said front and rear walls from said front and rear bottom edges upwardly for a first predetermined distance;

folding lower corners of said each side gusset outwardly and together to form downward pointing triangular panels;

folding said triangular panels inwardly from said side gussets;

folding lower portions of said front and rear walls inwardly;

sealing said front and rear wall together adjacent said front and rear bottom edges to form a bag bottom;

sealing said bag bottom to said side gussets adjacent upper edges of said triangular panels; and

sealing said triangular panels to an upper surface of said bag bottom.

13. The method of making a square bottomed plastic bag, as described in claim 12, comprising the additional step of folding said bag inwardly at said side gussets and upwardly from either of said front wall and said rear wall at a point spaced upwardly from said bottom edge, to form a flattened bag.

14. A method of making a square bottomed plastic bag, comprising the steps of:

extruding a tube of thermoplastic material;

forming side gussets in said tube and flattening same;

cutting said flattened tube perpendicular to said side gussets to a first predetermined length, thereby forming a bag blank, said bag blank having front and rear walls, front and rear top edges, front and rear bottom edges, first and second side edges;

forming a crease line in said bag blank, said crease line being parallel to said bottom edges and spaced upwardly from said bottom edges by approximately one half of a width of one of said side gussets;

slitting said bag blank from said bottom edges of said walls to said crease line at each intersection of said front and rear walls and said side gussets;

folding lower corners of said each side gusset outwardly to said crease line and together to form downward pointing triangular panels;

folding said triangular panels inwardly from said side gussets at said crease line;

folding lower portions of said front and rear walls inwardly from said crease line;

sealing said front and rear wall together adjacent said front and rear bottom edges to form a bag bottom;

sealing said bag bottom to said side gussets adjacent said crease line and upper edges of said triangular panels; and

sealing said triangular panels to an upper surface of said bag bottom.

15. The method of making a square bottomed plastic bag, as described in claim 14, comprising the additional step of folding said bag blank inwardly at said side gussets and upwardly from either of said front wall and said rear wall at said crease line, to form a flattened bag.

16. The method of making a square bottomed plastic bag, as described in claim 12, further comprising the step of cutting at least one handle opening in said bag, said handle opening extending through said front and rear walls in an upper portion of said bag.

17. The method of making a square bottomed plastic bag, as described in claim 12, further comprising the step of forming said bag of a porous material.

18. The method of making a square bottomed plastic bag, as described in claim 12, further comprising the step of forming microperforations penetrating at least a portion of any of said bag walls and side gussets.

19. The method of making a square bottomed plastic bag, as described in claim 12, further comprising the step of forming a plurality of ventilating openings penetrating at least a portion of any of said bag walls and side gussets.

20. The method of making a square bottomed plastic bag, as described in claim 12, further comprising the steps of:

joining said front wall to said rear wall at said top edges of said bag walls and joining top edges of said side gussets, thereby forming an upper seal; and

forming a U-shaped cutout, said cutout commencing at a first point on said upper seal spaced from said first side edge and extending downwardly toward said bottom

edges, across an upper portion of said bag walls and upwardly to a second point on said upper seal spaced from said second side edge, thereby forming an open bag mouth and a pair of bag handles terminating at said upper seal.

21. The method of making a square bottomed plastic bag, as described in claim 20, further comprising the step of cutting a pair of apertures, each of said apertures penetrating said bag handles at a point spaced downwardly from said upper seal, said apertures permitting said bag to be suspended from a dispensing rack.

22. The method of making a square bottomed plastic bag stack, as described in claim 20, further comprising the step of forming a central tab, said central tab extending upwardly from at least one of said front wall and said rear wall at said open mouth, said central tab having an opening therethrough for suspending said bag.

23. The method of making a square bottomed plastic bag, as described in claim 22, further comprising the step of forming a weakened area, said weakened area attaching said central tab to at least one of said front wall and said rear wall at said open mouth, said weakened area permitting said central tab to be torn from said open mouth of said bag as said bag is removed from a dispensing rack.

24. The method of making a square bottomed plastic bag, as described in claim 22, further comprising the step of forming said central tab with a weakened area, said weakened area extending from said opening to an edge of said central tab, said weakened area parting under pressure as said bag is removed from a dispensing rack.

* * * * *