United States Patent [19]

Shapiro et al.

[11] **3,739,977**

[45] **June 19, 1973**

[54] **PLASTIC MARKET BAG**

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[22] Filed: **June 22, 1971**

[21] Appl. No.: **155,515**

[52] **U.S. Cl.** ..... **229/55,** 229/58, 93/35 RB

[51] **Int. Cl.** **B65d 33/02**

[58] **Field of Search** ..... 229/53, 55, 58; 93/35 RB

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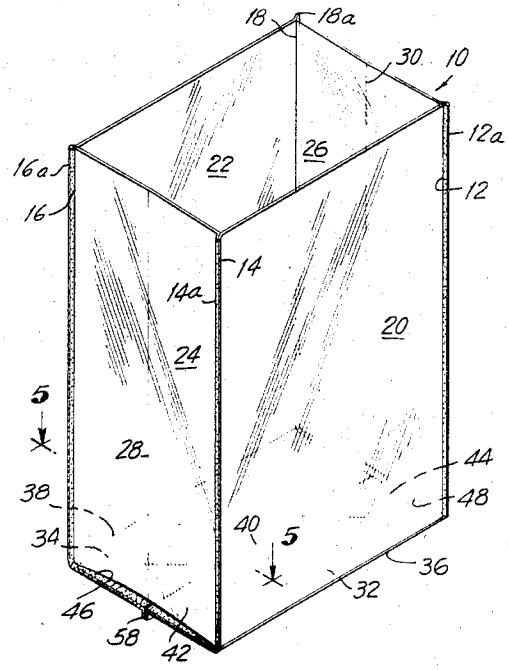
[57] **ABSTRACT**

A bag formed from a seamless section of tubular plastic film is provided wherein the lower end portions of one pair of opposing side wall members are folded inwardly and joined together to form a bottom base for the bag, and the lower end portions of another pair of side wall members are folded inwardly over the base so as to form gussets at the corner ends thereof which overlie and are heat sealed to the respective lower corner ends of the one pair of opposing side wall members.

2 Claims, 7 Drawing Figures



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SHEET 1 OF 2

FIG. 1

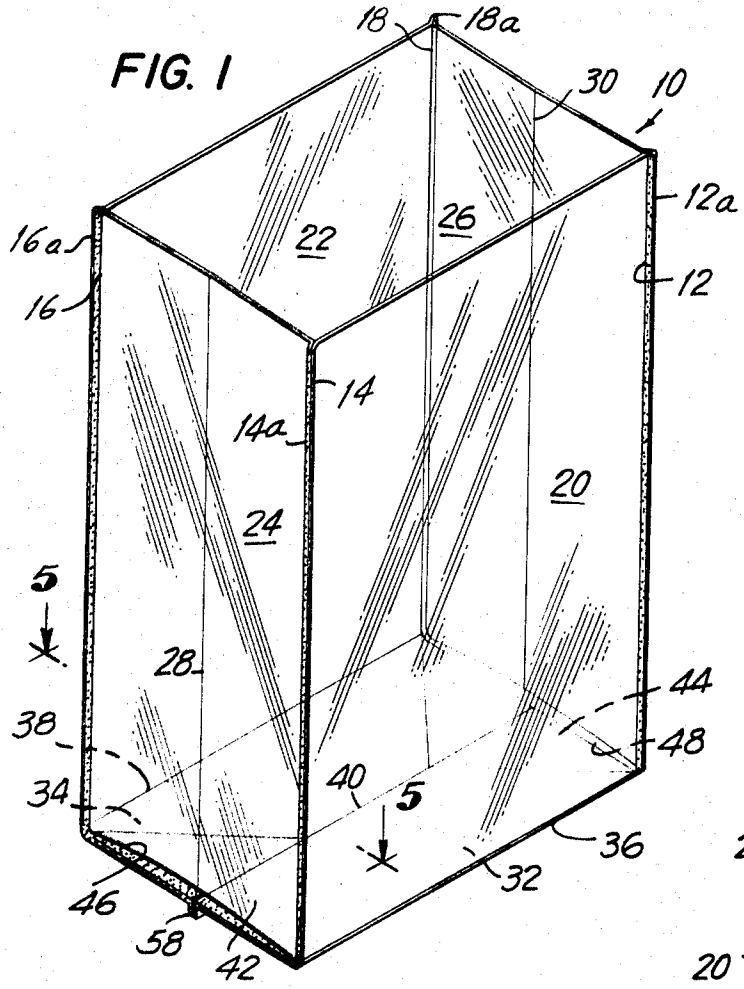
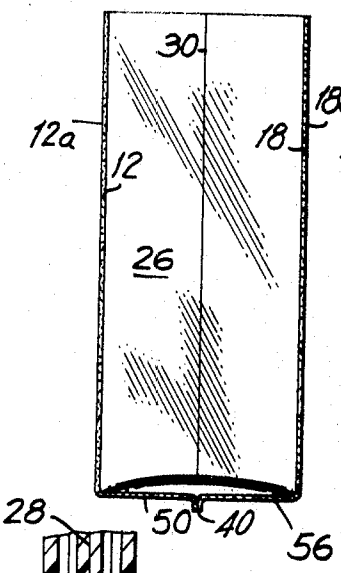


FIG. 2



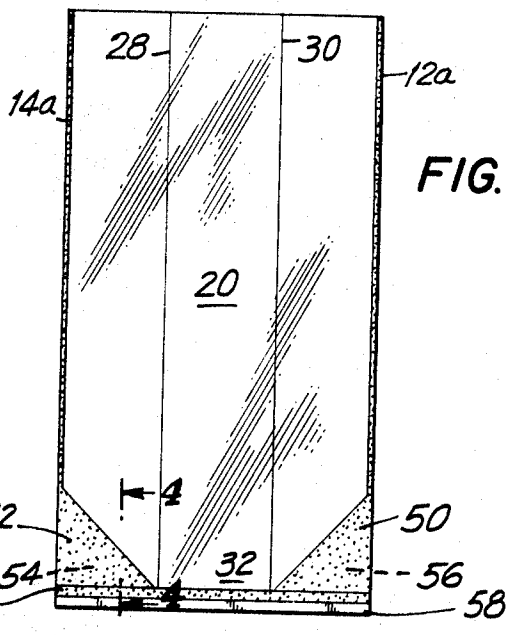


FIG. 3

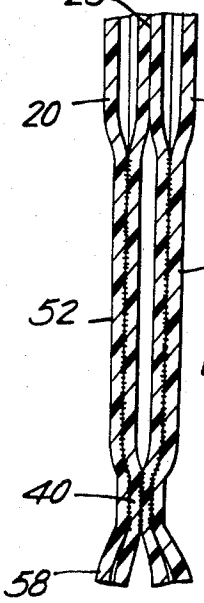


FIG. 4

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FIG. 5

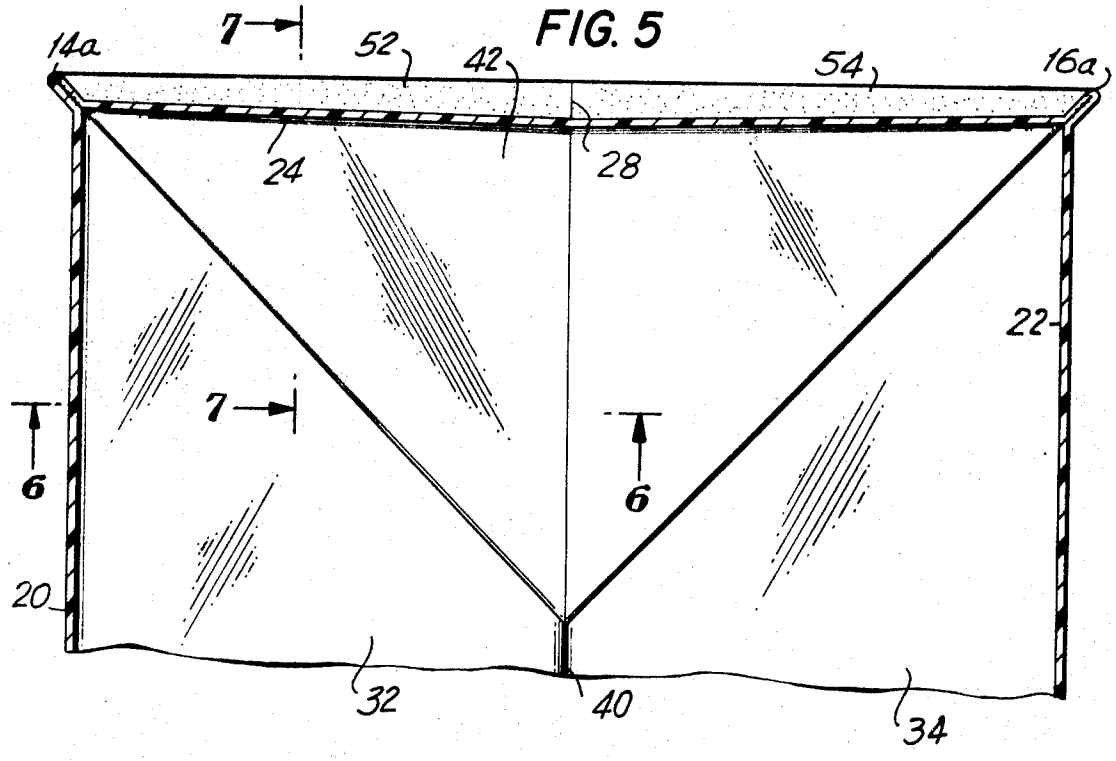
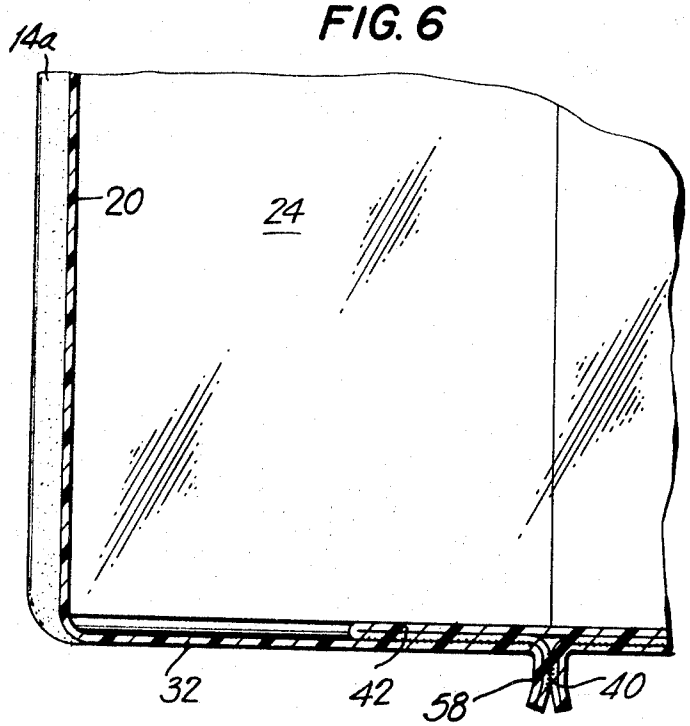


FIG. 6



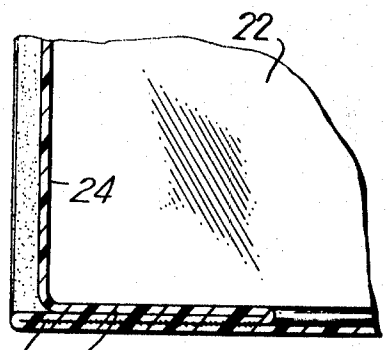


FIG. 7

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PLASTIC MARKET BAG

The present invention relates to plastic bags and more particularly to a plastic bag construction suitable for use as a market or grocers sack.

Market bags generally are made of paper and are formed from a flat sheet of paper stock which is cut, folded and then glued to provide the well known grocers bag in use in most supermarkets today.

In keeping with the growing emphasis on the use of plastics in industry today, particularly for packaging, there have been attempts made to develop a plastic grocers sack as a replacement or alternative to the conventional paper sack. One such plastic bag basically consists of a flat section of high density polyethelene film which is die cut to a bag pattern, folded, and glued in the same manner as a conventional paper sack. Heretofore, one disadvantage in this and other types of plastic bags has been their inability to assume an upright freestanding position and their relatively high manufacturing cost as compared to conventional paper sacks.

It is therefore an overall object of the present invention to provide an improved plastic market bag.

It is another object of the invention to provide a plastic market sack which is simple in construction, light in weight, and opens to provide a substantially flat bottomed bag with freestanding side walls.

Briefly described, the market bag of the present invention is formed from a seamless section of plastic tubular film having four spaced apart folds extending lengthwise along the film section to define two pair of opposing side wall members therebetween. The lower end portions of one pair of opposing side wall members are folded inwardly and joined together to provide a bottom base for the bag, the lower end portions of the other pair of opposing side wall members being folded inwardly over the base so as to form gussets at the corner ends thereof which overlie and are heat sealed to the respective lower corner ends of the one pair of opposing side wall members.

The novel features which are considered characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation as well as additional objects and advantages thereof, will best be understood from the following description when read in connection with the accompanying drawing in which:

FIG. 1 is a perspective view of a plastic market bag constructed in accordance with the present invention, the bag being shown fully open;

FIG. 2 is an end view of the open bag of FIG. 1;

FIG. 3 is a side view of the bag of the invention in a closed or collapsed state;

FIG. 4 is an enlarged fragmentary section view of an end gusseted area of the bag taken on lines 4—4 of FIG. 3;

FIG. 5 is an enlarged section taken on lines 5—5 of FIG. 1;

FIG. 6 is an enlarged section taken on lines 6—6 of FIG. 5; and

FIG. 7 is an enlarged section taken on lines 7—7 of FIG. 5.

Referring now to the drawings, a market bag constructed in accordance with the present invention is indicated generally therein by the number **10.** The bag is preferably formed from a seamless section of heat sealable flexible plastic tubular film. To provide a rectangular shape to the bag in its open condition, the film section is provided with four lengthwise folds **12, 14, 16,** and **18** which define two pairs of opposing wall sections, indicated in the figures as side wall members **20** and **22** and end wall members **24** and **26.** In a closed condition as shown particularly in FIG. **3,** the opposing end wall members **24** and **26** are pleated or folded in at **28** and **30** respectively so that the bag **10** lies flat, with the side wall **20** and **22** in uniform registration with one another. With the bag fully open, as shown particularly in FIGS. **1** and **2,** and the section views in FIGS. **5,6,** and **7,** the lower portions **32** and **34** of the respective side wall members **20** and **24** bend inwardly at respective fold areas **36** and **38** and are joined at their respective marginal edges by a heat seal seam **40** so as to form a rectangularly shaped bottom closure for the bag **10.** The lower portions **42** and **44** of end wall members **24** and **26** extend inward at respective fold areas **46** and **48** then bend backward to form gussets overlying each end corner of the lower side wall members **32** and **34** forming the bottom closure for the bag **10.**

In accordance with an important feature of the present invention, gussets **50, 52, 54,** and **56** are heat sealed to the respective end corners of the lower side wall members **32** and **34** and merge with the seam **40** intermediate the bottom of the bag. It is preferable that the heat seal at the four corner areas of the lower side wall members **32** and **34** forming the bottom closure completely cover each of the gussets **50, 52, 54,** and **56,** the seals at each corner thereby extending in along the bottom forming lower portions of the side wall members and subtending an angle of approximately 45° with the heat sealed seam **40.** Looking at the gusset seals with the bag in a closed condition, as in FIG. **3,** one edge of each gusset merges with a respective lengthwise fold, and another edge merges with the seam **40,** the two edges in the repsective gussets forming a right angle. This gusset sealing adds rigidity to the bag and helps to provide a flat bottom area for free standing of the bag in an open condition. Thus, it will be seen that a sealed bottom closure of the bag is provided by a heat seal seam running adjacent the marginal edges of the lower side wall members **32** and **34** and joining the gusseted end walls.

Further in accordance with the present invention and to give the bag rigidity in the lengthwise dimension to enable the bag to stand unsupported in an open condition, the marginal edges of adjacent wall members at each of the folds **12, 14, 16,** and **18** are heat sealed to provide respective seams **12***a*, **14***a*, **16***a*, and **18***a* running lengthwise along the fold lines between the opposing wall members.

Turning again to FIG. **3** and FIG. **4** where the bag of the present invention is shown in its flat or collapsed condition, an inexpensive and expeditious manner of manufacturing plastic market bags having the construction as just described, may be as follows.

The bags may be either hand or machine formed in a continuous operation from a seamless roll of blown tubular plastic film. More particularly, a section length of the film is pleated or inwardly folded to flatten the film section such that opposing side wall panels are brought into uniform registration with each other. Spacers (not shown) may then be inserted between the pleats or folds in the end wall panels and a heat seal

provided at the marginal edges of adjacent wall sections at the respective area folds and a heat sealed gusset portion provided at each of the respective corner portions at the bottom side wall portions of the film length. The spacers are then removed following which a heat seal seam is provided along the bottom borders of the film section joining the two side walls and the pleated end walls. Marginal unsealed edge tabs shown at **58** in the figures may be provided to extend below the bottom heat seal seam to provide a tear or cutting area for separating the bag section length in the manufacture thereof from a continuous roll of plastic film.

By grasping a severed bag section along one of its side wall top edges and applying a quick downward shake of the wrist, the bag is easily opened to define a box like configuration having a substantially flat bottom portion and upstanding side walls.

It will thus be seen that a plastic bag construction has been provided having reinforced bottom corners and lengthwise edges and which opens to provide a substantially flat bottom and freestanding side wall members.

It is believed that the above described bag construction of the invention may be suitably made from blown polyethylene film, copolymer film, polypropylene film or other similar materials having a range of thickness varying between 2 and 5 mils. For example, one such bag may be constructed of a low density polyethylene film of approximately 3 mils thickness, the bag being 21 inches long with a 12 by 7 inch bottom cross section and 3/16-inch marginal seams at the fold areas.

What is claimed is:

1. A bag formed from a seamless section of film tubing comprising in its open condition:

a major length portion of generally rectangular cross section formed by four spaced apart folds running lengthwise along the film section defining two pairs of opposing wall members therebetween; and

a bottom portion formed by inwardly folded extensions of said wall pair members, the extensions of one pair of said wall members being joined at a seam intermediate the bottom portion, the other pair of wall member extensions being folded back to provide a gusset section at each of the corner ends thereof which overlie and are joined to respective corner ends of the extension of said one pair of wall members,

the marginal edges of adjacent wall membrs at each

of said lengthwise folds being sealed together to define respective lengthwise seams at each of said folds,

the seam intermediate the bottom of said bag being provided by a heat seal joining the folded extensions of said one pair of wall members and each of said gussets being heat sealed to the respective bottom corners of said one pair of wall members and merging with said intermediate seam.

2. A market bag which stores flat in closed condition and when opened is flat bottomed and self standing, comprising:

a length of seamless tubular plastic film having top and bottom edges and four axial folds formed therein to provide two pair of opposing wall members;

two axial fold lines located substantially midway along the respective wall members of one of said two pairs of opposing wall members;

said one pair of wall members being folded inwardly along said respective fold lines to flatten said tubular film and bring said other opposing wall members into uniform registration with each other with said bag in closed condition;

a first heat sealed section joining the bottom edges of each of said wall members;

second heat sealed triangular sections located at each of the corner portions of the bottom edge of said film, said triangular sections having one edge defined by said first heat sealed section and a second edge defined by each of said axial folds, said two edges in the respective triangles forming a right angle,

said triangular sections providing a substantially flat bottomed base for said bag in open condition with said two pair of opposing wall members defining a substantially rectangular cross sectional area therebetween,

said four axial folds being each heat treated to provide axial stiffness for said bag such that said wall members are substantially self standing with said bag in open condition; and

third heat sealed sections extending respectively along each of said four axial folds and merging into said second sections at the respective corner portions at the bottom of said bag.

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