United States Patent

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[54] **GUM CUP BAG**
7 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **47/11,** 229/53
[51] **Int. Cl.** **A01g 23/14,** B65d 31/10
[50] **Field of Search** 229/53, 55; 47/10–12, 50; 229/68

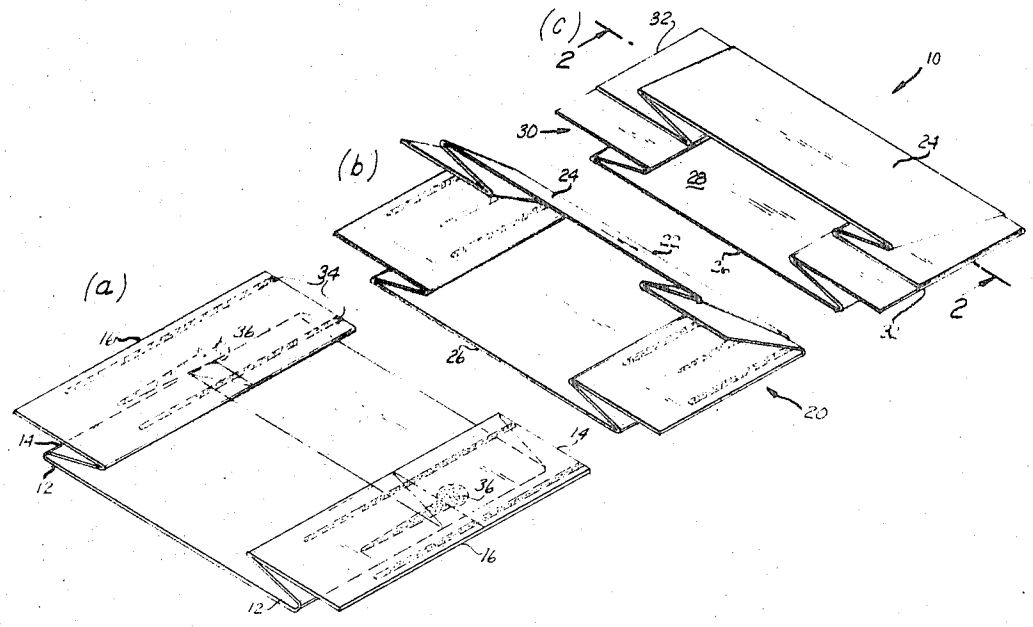
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ABSTRACT: A gum collecting bag having front and rear panels, end overfolded, and Z-shaped side gussets connecting the panels. Extended side seam fins terminating beyond the periphery of the panels permit the bag to be readily affixed to gum trees and to assume the proper shape. A coating of a material which does not contaminate a gum melt, such as a polyamide resin or cellulose acetate, may be applied to the bag to enhance its capacity to withstand weathering during collection. The bag may have a reinforcement fold extending along the top of the longer panel and integral gussets and fins thereof.



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SHEET 1 OF 3

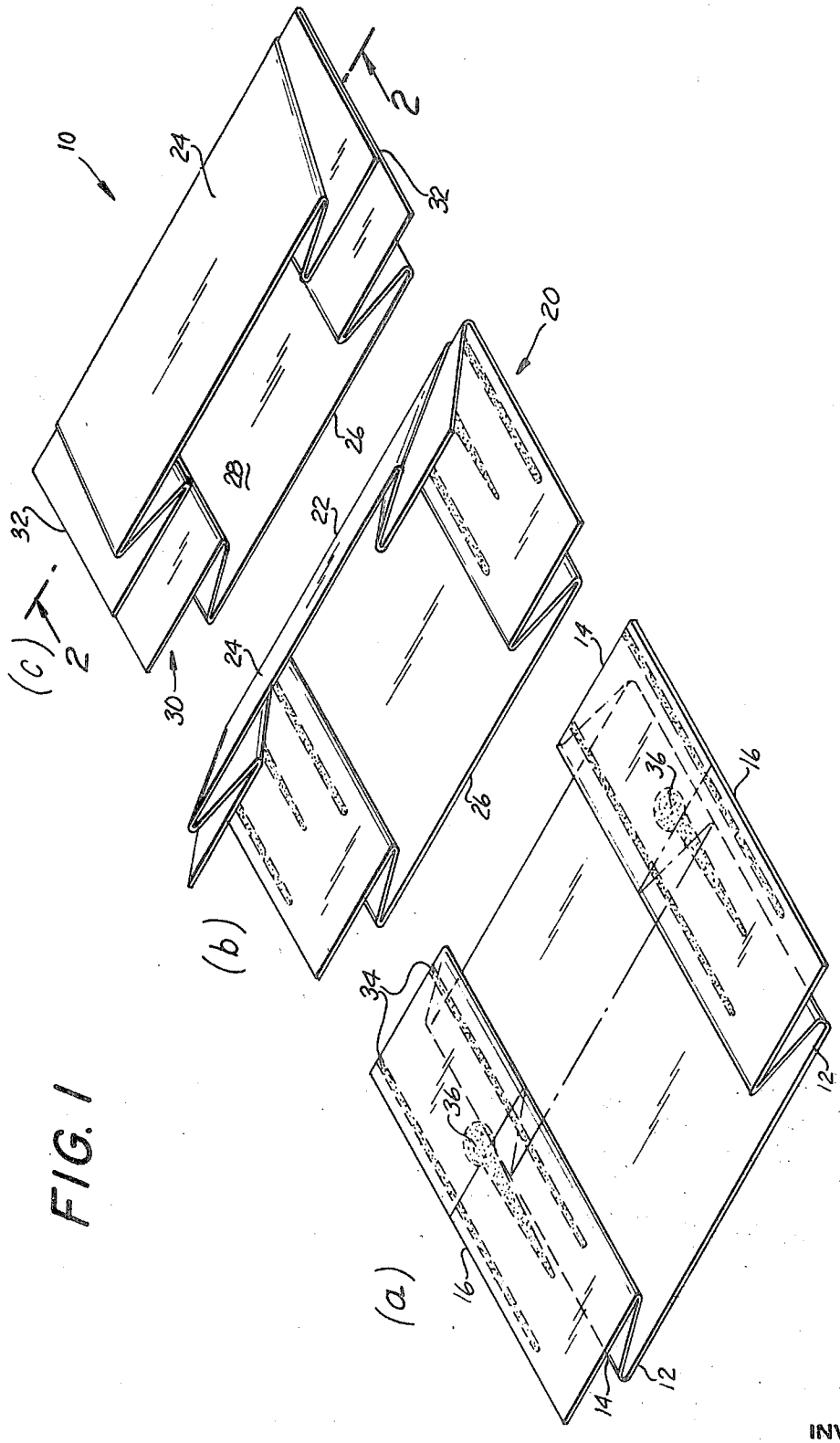


FIG. 1

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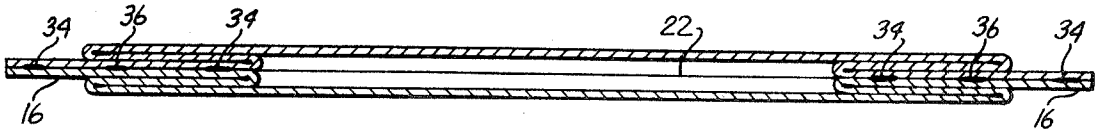


FIG. 2

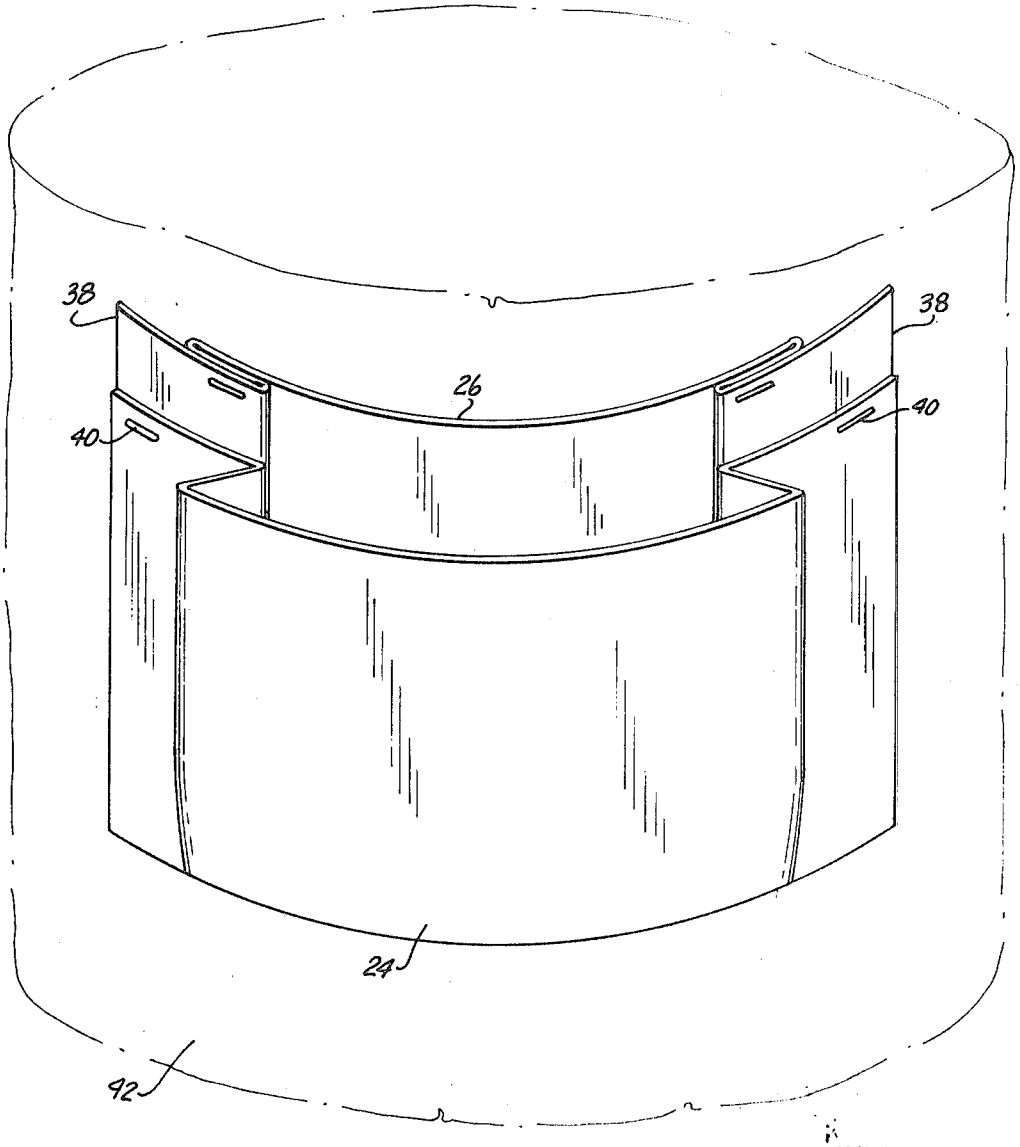
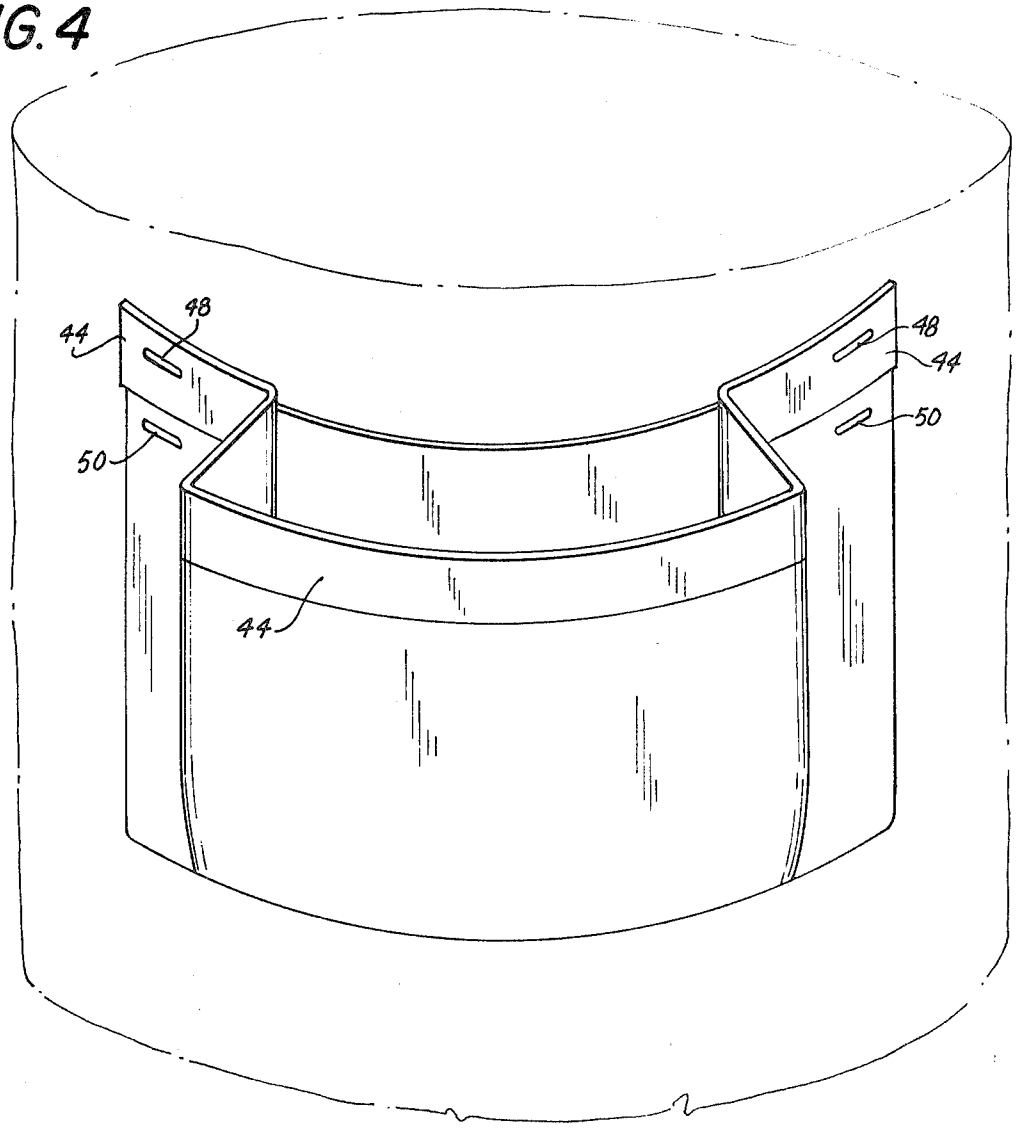


FIG. 3

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FIG. 4



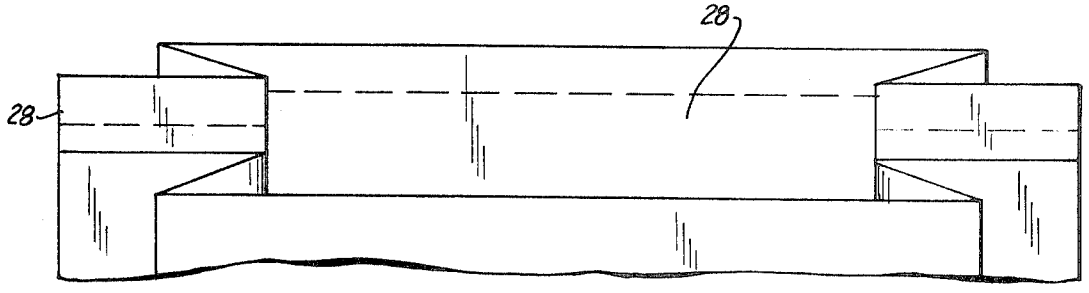


FIG. 5

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GUM CUP BAG

BACKGROUND OF THE INVENTION

Exudable material, as gum rosin, gum arabic, and gum rubber is often harvested from gum trees by employing a system of gutters and metal gum cups. Gum, exuding from a slash or streak, is run into the gutter and conducted to a metal gum cup. After a short period, usually a few weeks, the metal cups are emptied and replaced.

The harvesting operation has various defects. Iron oxide from rusted metal gutters and cups often contaminates the exudate. The metal cups and gutters are unwieldy and difficult to position on gum trees. Owing to the small capacity of metal cups, harvesting operations must be repeated often with attendant high manpower costs. FUrther, gum collected in metal cups is readily washed out during heavy rain and is subject to oxidation, catalyzed by the metal cup. Dust and trash are readily drawn to a metal collection system and contaminate stored gum.

In order to overcome these difficulties, it has been proposed to employ a paper bag to collect gum. However, conventional bags and boxes collapse under the combined weight of gum and often leak gum when hung to conform to tree curvature. Conventional multi-ply bags having flat bottoms and square sides tend to pouch out excessively and leak gum. Further, conventional paper bags tend to fail before a desirable gum collection period of from 2 to 3 months.

In employing paper bags, it has been found to be highly desirable to simply detach the bag and collected gum from the tree and introduce the mass into a conventional gum processing system. In this system, the gum is treated at elevated temperatures to recover such valuable constituents as turpentine and resin acids. Certain conventional bag coatings, as polyethylene and polypropylene, often employed to render bags water proof, are attacked by various constituents in the gum processing system, such as turpentine, and contaminate the valuable end products. Further, other "-waterproof" coatings are attacked by acid paste used to stimulate gum flow.

SUMMARY OF THE INVENTION

It is, therefore, a primary object of this invention to provide a paper gum cup bag readily mounted on a tree and capable of collecting and storing gum over an extended period. It is another object of this invention to provide a coated gum cup bag capable of resisting the effects of gum-flow-stimulating-acid paste. It is an additional object to provide a coated gum cup bag which can be introduced into a gum processing system without contaminating the valuable gum products.

The above and other objects are met by an end over folded paper bag having side gusset fins sealed together and extending beyond the periphery of the front and rear panels of the bag. That portion of the bag comprising front and rear panels of unequal length in opposed relation and integrally connected about a transverse fold line forming a bottom seam is designated the shell. The front and rear panels are also denominated shell panels. The rear panel projects above the front panel as a lip. The extended side fins permit the bag to be affixed to a gum tree by merely stapling the rear gussets and back panel to the tree, pulling the front panel and front gusset fins outward, laterally, at the top and applying staples through the gusset fins to the tree. The gum cup bag, so affixed, does not "pouch-out" excessively with resultant gum loss. The bag is readily affixed and removed from its gum collection position. Such a bag is adapted to collect and store any compatible flowable material.

In order to further reinforce the bag of the invention, a reinforcement fold is made extending the length of the top edge of the longer shell panel, integral gussets and gusset fins of said panel, as by folding the lip of the rear panel to stiffen the top outer edge of the bag. The bag is affixed to a tree by placing

the front panel next to the tree, pulling the rear panel and gusset fins outward laterally at the top, and applying staples through the folded lip and through the gusset fins to the tree.

For the purpose of this invention, references to a "coated" bag are also deemed to include a laminated bag.

A leak-proof coated bag which is acid resistant and compatible with gum processing techniques is provided by employing a coating (or laminate) selected from the group consisting of nylon and cellulose acetate for the gum cup bag of the invention. The coated bag resists leakage during a collection cycle of 2 to 3 months or even more and does not contaminate gum products during processing at elevated temperatures of over 150° F

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. 1 is a perspective view illustrating the construction of a gum cup bag from a partially folded blank and showing the lines of fold;

FIG. 2 is an enlarged cross-sectional view of a finished bag in its collapsed state showing the bottom fold line and side seams and taken along line 2—2 of FIG. 1;

FIG. 3 is a front perspective view of a finished bag affixed to a tree and ready to receive gum;

FIG. 4 is a front perspective view of a finished bag of a second embodiment of the invention affixed to a tree; and

FIG. 5 is an enlarged fragmentary view of a rear panel of an unfinished bag illustrating, by way of phantom line, the fold which is made in the lip to reinforce the top edge of the bag.

DESCRIPTION OF PREFERRED EMBODIMENTS

As illustrated in FIG. 1, gum cup bag 10 may be formed by folding the longitudinal end portions of blank 12 inwardly and thereafter outwardly to form Z-shaped gussets 14. It is of critical importance that side fins 16 extend outwardly beyond the end lines 18 of the side folded blank. Adhesive is applied to the side fins of the blank employing at least one strip for each fin. In FIG. 1 a pair of adhesive lines 34 are applied to each side fin.

If the bag is formed from a continuous web, the partially formed bag previously described is cut to a predetermined length in a conventional manner.

Partially formed bag 20 is next folded into a finished bag. An end-over fold is employed to form seamless bottom 22, front panel 24, rear panel 26 and peel-loaded side seams 32 with extended fins in each gusset. It is preferred to employ a straight, end-over fold, spaced to permit lip portion 28 on rear panel 26 to extend beyond front panel 24 when the bag is in a collapsed state (30). Adhesive lines 34 are preferably applied to coincide with the junction of the front and rear panels.

In a continuous gum cup bag fabrication process, the bag is folded by scoring the blank at a predetermined position for the bottom fold line and folding the blank 180° along the scored line. The folded bag is delivered to a catch box after the adhesive is set by conventional means.

It is preferred to apply a hot melt of adhesive 36 along the bottom fold between the side seam adhesive lines on both gussets to eliminate channeling of gum constituents and/or water along the side seams.

FIG. 2 illustrates a finished bag in its collapsed condition showing the location of the bottom fold line, adhesive lines and the extended side seam fins 16 on each gusset.

Referring now to FIG. 3, it is seen that the gum cup bag is readily affixed to a gum tree 42 in a partially pouched condition for gum collecting purposes. The front panel is caused to partially open by stapling the rear gussets 38 and backpanel 26 to the gum tree, pulling the gusset fins laterally outward at the top and thereafter applying staples through the extended gusset fins 40. In this position, front panel 24 is extended at an acute angle from the tree.

Best results are achieved in obtaining both correct positioning for the gum receiving portion of the bag on the gum tree

and rapid installation of the gum cup bag, when the side seam fins extend at least about 1 inch beyond the sides of the body panels. The fins should be sufficiently extended to permit the bag to conform to the curvature of the tree. However, fins extended beyond a few inches are wasteful of bag material and require undue manipulation for installation.

The lip portion of the bag is preferably extended at least about 1½ inches beyond the top of the front panel. The lip should be far enough above the front panel to permit stapling of the rear gusset to the tree.

Turning now to FIGS. 4 and 5, there is shown an alternate embodiment of the bag. The bag is fabricated as illustrated in FIG. 1 and described hereinbefore. As seen in FIG. 5, the lip portion is folded over, preferably outwardly from the bag body to form a reinforcement strip **44**. The lip portion **28** should preferably extend at least about 2 inches beyond the front panel prior to folding.

The lip portion is folded over across its entire width, including the gusset and extended fins, to stiffen and reinforce the panel. In mounting, the bag is turned so that the rear reinforced panel opens away from the tree. The bag is stapled at the top in the extended fin, folded-lip areas **48** and just below the areas (50) through the extended fins.

In general, simplex, duplex and multiplex bag construction may be employed. In order to conserve bag material, simplex construction is preferred. High wet strength paper is also preferred for bag material.

In a preferred embodiment, two sheets of wet strength kraft paper are laminated together to enhance the ability of the bag to resist weathering and to improve the fluid retention properties of the bag without detracting from the purity of the gum products produced, when the bag and collected gum are processed in conventional gum product recovery systems. The laminating material must be compatible with and readily applied to, bag material, yet resist the action of the organic solvents, such as turpentine, at elevated temperatures in a gum melter. Should the laminate dissolve or decompose during exposure either to gum, the elements, organic solvents, gum-flow-stimulating-acid paste or the like, then the gum products eventually produced will be contaminated.

It has been discovered that a coating of nylon or cellulose acetate will enhance the desirable characteristics of the bag without contaminating gum end products. The coating may be applied to the bag by conventional methods. It is preferred to laminate the coating to the bag when employing nylon. Generally sufficient coating is applied to the bag to impart a predetermined degree of weatherability to the bag and usually from about 10 lbs. to 30 lbs. of coating are employed per 3000 square feet of bag web.

Suitable nylon or polyamide resin coatings usable are: amides of alkylene diamines and diacids, such as nylon **6**, **6** (hexamethylene diamine and adipic acid); polylactams as nylon **6** (caprolactam) and nylon **12** (lauryllactam); and polymers of terminal amino-substituted carboxylates as nylon **11** (aminoundecanoic acid). Particularly preferred nylons include nylon **6** and nylon **6**, **6**.

Although the above coatings have been heretofore described in connection with a side gusseted bag, such coatings are useful with any gum cup bag, and particularly with an end-over folded bag with sealed side seams, and especially with adhesively sealed Z folded side panels.

The following examples are given to illustrate the invention and are not limitative of scope:

EXAMPLE I

An end-over-fold bag was constructed from a blank 26 inches in width and 17½ inches in length. Z-shaped side gussets were formed by reverse folding 6-inch end portions of the blank to leave 1 inch of the side fins extending beyond the sides of the body of the blank. A pair of adhesive strips were applied to the side gussets. A hot melt was applied between the strips with a heavy concentration at the proposed bottom fold line. The bag was end over folded to leave a 1½-inch lip. The bag material was laminated with coating material.

The bag was affixed to a rosin tree below a slash and was allowed to collect gum for over 2 months. The bag did not contaminate a melted batch of gum at temperatures above 200° F. in the presence of turpentine. The gum collected was of a high (X) grade, not contaminated with iron oxide and, freer of dust and trash than gum collected from a metal cup and gutter system. Similar results are achieved employing a cellulose acetate coating.

COMPARATIVE EXAMPLE I

A gum bag was constructed according to Example I of two plies of multiwall paper coated with polyethylene on the inner ply. After gum had been collected in the bag, the gum and bag were introduced into a melter in the presence of turpentine at temperatures above 150° F. The coating partially cooked off the bag and contaminated the melt.

Other variations in the gum cup bag are possible. For example, a grade of very high wet strength board may be employed in the bag to increase the capacity of the bag to resist weathering. Strips of reinforcement material may be applied to the bottom fold and/or peel seams to impart additional wet strength and leak resisting properties.

The invention is not to be limited except as set forth in the following claims.

Wherefore I claim:

1. An expandable bag suitable for collecting gum having a shell formed from front and rear shell panels of unequal length in opposed relation and integrally connected about a transverse fold line forming a bottom seam, and a pair of side seams connecting said panels, each of said seams formed from a pair of opposed side panels, each side panel of said pair extending toward the other from a shell-forming panel and comprising:

a. a first gusset folded inwardly of said shell, and

b. a gusset fin extending outwardly of said shell and beyond the periphery of the shell, said fin formed by reverse folding the end portion of said first gusset, each gusset fin being adhesively sealed to an opposed gusset fin.

2. The bag of claim **1** coated with a material selected from the group consisting of a polyamide resin and cellulose acetate.

3. An expandable bag suitable for collecting gum having a shell formed from front and rear panels of unequal length in opposed relation and integrally connected about a transverse fold line forming a bottom seam and a pair of side seams connecting said panels, said bag having a weather resistant coating.

4. The bag of claim **3** in which the coating material is selected from the group consisting of a polyamide resin and cellulose acetate.

5. The invention in accordance with claim **1** including a reinforcement fold extending the length of the top edge of the longer shell panel and the integral gussets and gusset fins of the said longer shell panel.

6. The bag of claim **5** including a weather resistant coating thereon.

7. The bag of claim **6** wherein said coating is selected from the group consisting of polyamide resin and cellulose acetate.