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PLASTIC BAGS WITH METAL FOIL LAMINATED LIPS

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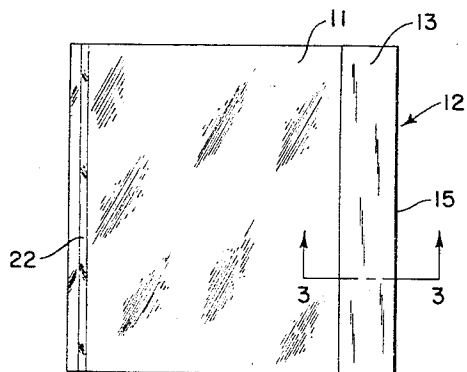


FIG. 1

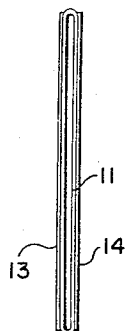


FIG. 2

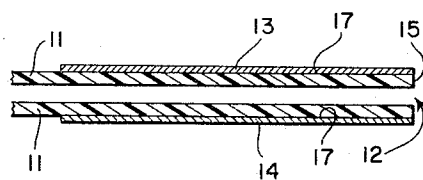


FIG. 3

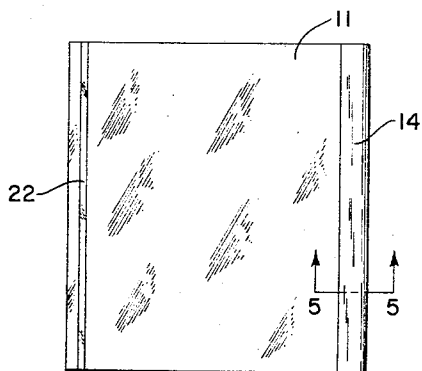


FIG. 4

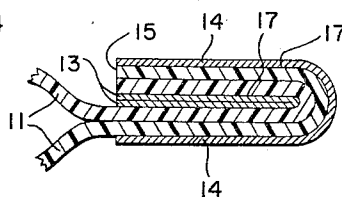


FIG. 5

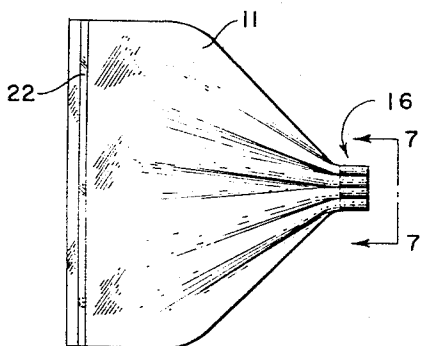


FIG. 6



FIG. 7

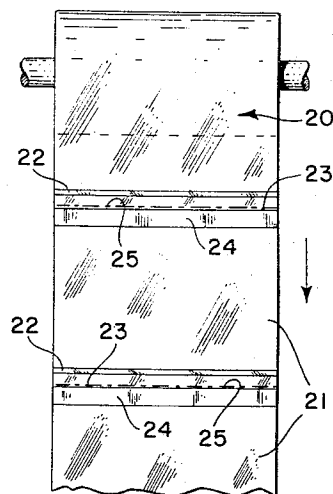


FIG. 8

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PLASTIC BAGS WITH METAL FOIL
LAMINATED LIPS

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2 Claims. (Cl. 206—59)

This invention relates to plastic bags and particularly to such bags wherein metal foil strips are surface bonded along the edge areas at the open end of the bag.

The invention in its preferred embodiment will be described as applied to thin walled transparent plastic bags such as are used for packaging and storing foods, garbage, loose articles or the like.

These bags are currently made of limp low density grade polyethylene film sheeting of only between one to three thousands of an inch in thickness. These bags when ready for use are closed except for one end that is open to receive the contents. After the contents are inserted the bag is closed by folding back or rolling over the edge area at the open end. Considerable difficulty has been encountered in closing these thin walled bags because of the tendency of the folded over plastic material to remember its original state which causes it to uncurl and unfold to reopen the bag.

These bags may for example be of the type disclosed in United States Letters Patent No. 2,759,648 to Piazza issued Aug. 21, 1956. They usually are integral sections of a long tubular web of the bag material that is flattened and wound on a dispenser roll with sealed transverse areas defining the bag bottoms and adjacent transverse score lines enabling an individual bag sized section to be torn off when the roll is mounted in a suitable dispenser casing.

It has been proposed to provide these individual bag sections with adhesive coatings for sticking together the open bag end lips after the contents are inserted, but this has proved to be impractical in dispensing in that a parting sheet or the like must be provided to prevent premature bonding of contacting surfaces of the roll in the dispenser. Other modes of bag closure involve separately attached elements or expensive structure, and none have proved suitable in dispensing assemblies prior to the invention.

The invention provides the bag side area adjacent the bag opening with a strip of suitable crimpable material, which is preferably a thin metal foil, full surface bonded in laminated permanent attachment to the plastic wall of the bag.

It is therefore the major object of the invention to provide a novel very thin walled plastic bag structure wherein crimpable material capable of retaining a given fold or shape is full surface bonded upon the bag side along the edge of the bag opening.

Another object of the invention is to provide a novel bag structure having walls of thin plastic sheet material such as low density polyethylene of as little as one to three thousandths of an inch in thickness having one or more bands or strips of crimpable material such as very thin aluminum or like metal foil surface bonded to the plastic bag along the area or areas at the periphery of the opening.

Further objects of the invention will appear as the description proceeds in connection with the appended claims and the annexed drawings wherein:

FIGURE 1 is a side elevation of a thin walled plastic bag laminated with metal foil strips along the edges of the open end according to a preferred embodiment of the invention;

FIGURE 2 is an end elevation looking into the open end of the bag of FIGURE 1;

FIGURE 3 is a greatly enlarged fragmentary view in

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section on line 3—3 of FIGURE 1 showing the laminated plastic and metal foil at the open end of the bag;

FIGURE 4 is a side elevation like FIGURE 1 but with the laminated edge area folded over to close the bag;

FIGURE 5 is a greatly enlarged fragmentary view in section on line 5—5 of FIGURE 4 showing the folded over structure;

FIGURE 6 is a side elevation showing the bag of FIGURE 4 with the folded edge area of FIGURE 4 crimped transversely of the bag;

FIGURE 7 is an enlarged end view diagrammatically showing the crimped closed open end of the bag viewed on line 7—7 of FIGURE 6;

FIGURE 8 is a diagrammatic view showing the invention wherein successive bag sections are integrally connected for dispensing.

The individual plastic bag 11 which is so limp that it lies essentially flat prior to use has all of its ends closed except the open end indicated at 12. Bag 11 is preferably made of light weight thin transparent thermoplastic polyethylene about 0.001 inch thick. A convenient size for such bags in flat condition is about about twelve inches in length and twelve inches wide. In the invention, two similar strips or bands 13 and 14 of aluminum foil each about two inches wide are adhesively full surface bonded across the bag edge areas. One side edge of each foil strip is preferably flush, with the open edge 15 of the bag. Each foil strip is twelve inches long, and in one successful embodiment the foil is aluminum foil about 0.0007 inch thick. If desired a single foil strip 24 inches long may be bonded around the open end of the bag.

After the contents are placed in the bag, the bag is closed by doubling over the laminated edge area as shown in FIGURES 4 and 5. Then, see FIGURES 6 and 7, if desired for more secure closure the folded over edge area of FIGURE 4 is longitudinally crimped transversely of the bag to provide a closely crimped end region indicated at 16. For example with this bag full of water and the edge area folded upon itself and longitudinally crimped as described, this provides a water tight closure even when the bag is upended.

FIGURE 8 shows the invention as applied to a tubular length of the bag material wound flat upon a roll 20. The individual bag sections 21 are separated by transverse sealed areas 22 and transverse score lines 23 as in said Piazza patent. However, bonded upon the tubular bag material on the opposite side of the score line 23 from the sealed area 22 in the invention are transverse laminated crimpable strips 24 whose side edge 25 may coincide with the score lines to facilitate tearing off the bag section. When a bag section 21 is torn off the strip of FIGURE 8 it will appear as shown in FIGURE 1.

While the preferred embodiment employs a relatively wide band of metal foil laminated upon the plastic around the open end of the bag, it is within the scope of the invention to effect the closure by bonding only a single twelve inch long metal foil strip of suitable width along one side edge area, or by replacing one or more strips 13 and 14 by stiff foldable paper of suitable characteristics, or even laminates of paper and foil. In all embodiments a suitable wide strip of crimpable sheet material is full surface bonded along the edge area at the mouth of the open bag. This strip preferably has a side edge flush with the open end edge of the bag as shown in FIGURE 1, and its length is preferably at least equal to one-half the periphery of the open end of the bag although it may be made up of aligned sections.

The term crimpable sheet material is intended to include metal foil, stiff paper and metal foil laminates, any of which possess the necessary characteristic of being capable of a so-called shape retaining dead fold. In other words the material will retain a given fold or crimp, and

in the assembly such prevents unfolding and uncurling of the thin flimsy plastic at the open end of the bag. If desired the crimpable sheet material may be bonded to the inner edge areas of the bag opening rather than the outer areas as disclosed in the preferred embodiment.

Any suitable flexible adhesive which will bond the plastic and aluminum foil in permanent full surface lamination and will not capture or separate when folded can be employed. A preferred adhesive for polyethylene bags of this type is one composed of suitable proportions of polyvinyl chloride resin and thermoplastic chlorinated diphenyls in a liquid vehicle of toluene and containing a suitable antioxidant. A preferred formula is:

Material:	Parts by weight
Polyvinyl chloride (Elvax 150 Du Pont)	30.
Chlorinated diphenyl oil (Aroclor 5460 Monsanto)	40.
Chlorinated diphenyl resin (Aroclor 1254 Monsanto)	30.
Antioxidant (Ethyl Corp. Antioxidant 720)	0.0025
Toluene	600.
	700.0025

This adhesive is applied as by spraying onto the metal strip surface and allowed to air dry for about five minutes until it is adequately tacky. Then the strip is pressed in place onto the plastic bag area. The toluene it is believed combines to dissolve some of the plastic at the bag surface before it evaporates, leaving a good full surface bond between the strip and bag.

It is important to use a suitably flexible adhesive at the interfaces marked 17 in FIGURES 3 and 5 to permit such small relative movements of the foil and plastic sheet surfaces as are involved in the folding and crimping actions without causing separation of the surfaces or causing surface wrinkles in the foil or plastic between the fold lines.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to

be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by Letters Patent is:

1. A dispensing system for plastic bags comprising a long tubular body of very thin highly flexible thermoplastic sheet material which is normally flat wound into a roll, said body being heat sealed there across at longitudinally spaced transverse areas to divide it into individual bag sections and being provided with transverse weakened regions adjacent and parallel to said heat sealed areas, and transverse bands of crimpable material surface bonded to said body at the opposite sides of said weakened regions from said heat sealed areas so that each of said weakened regions extends across said body flanked on opposite sides by one of said bands and one of said heat sealed areas, whereby individual bag sections having said bands at their open ends may be detached from said body by tearing at said weakened sections.

2. The dispenser system defined in claim 1 wherein an edge of each of said bands lies along a weakened region.

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