April 28, 1964 C. R. MACK 3,130,896

REINFORCED BAG

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FIG. 1

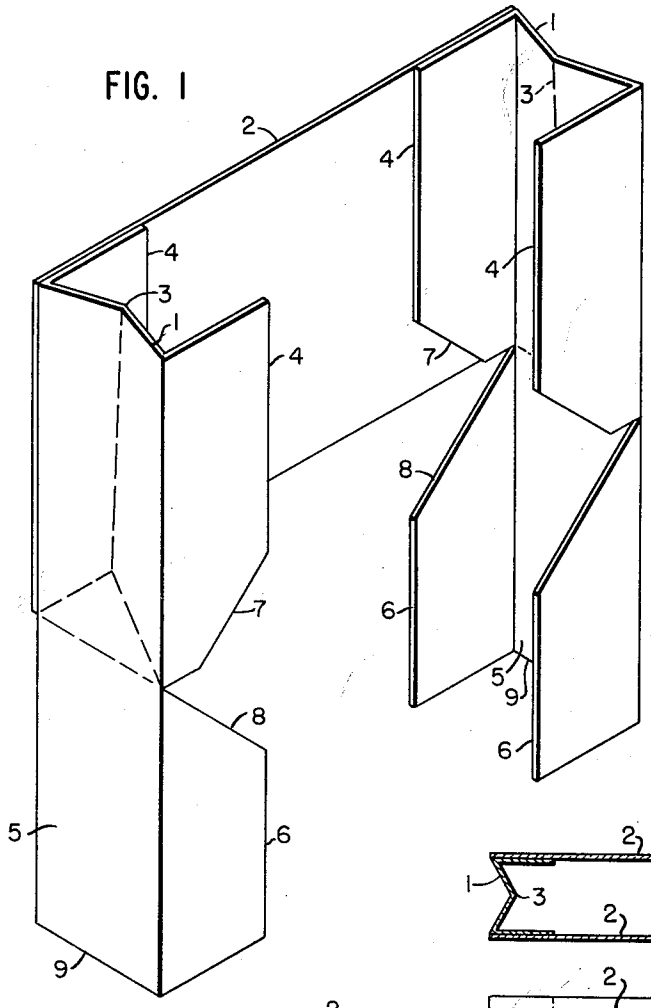


FIG. 2

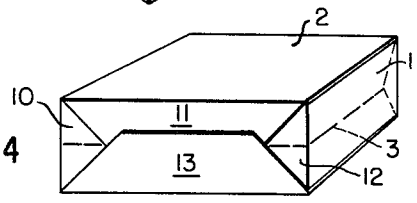


FIG. 4

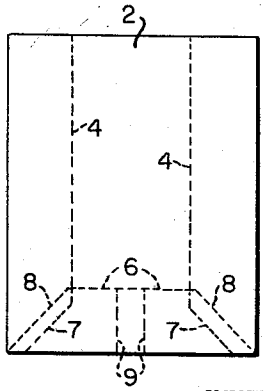


FIG. 3

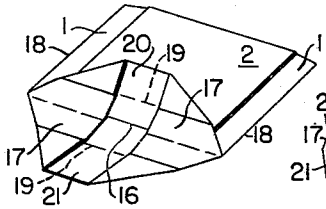


FIG. 5

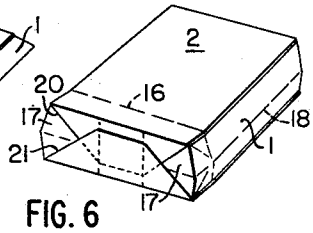


FIG. 6

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FIG. 7

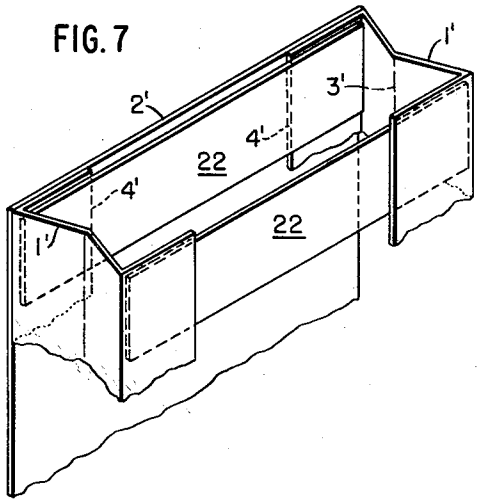


FIG. 8

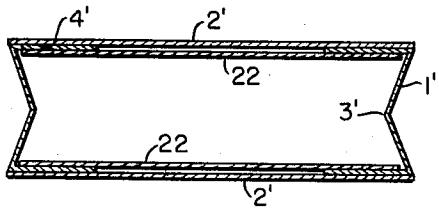


FIG. 9

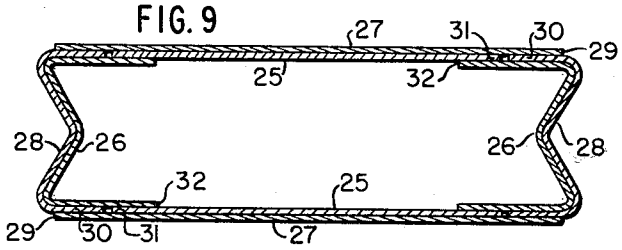


FIG. 10

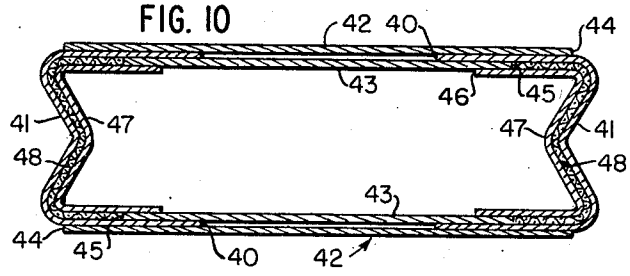


FIG. 11

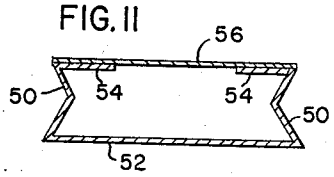
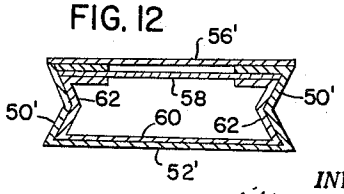


FIG. 12



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REINFORCED BAG

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Filed June 30, 1961, Ser. No. 124,287
6 Claims. (Cl. 229—55)

This invention relates to bag constructions, and more particularly to an improved bag construction which affords increased packaging protection along the edges of the bag, and is particularly adapted for use as a shipping container. Many articles which are subject to damage in shipment, such as box springs, plaster board, fiber board, laminated plastic sheets or other items, call for reinforced packaging protection along their edges, which are especially subject to injury. It is to the provision of an improved reinforced or padded bag affording increased edge protection that my invention is particularly directed. Further objects and advantages of the invention will become apparent as the following description proceeds.

In general, I may carry out my invention by providing a bag essentially comprising a tube made up of a pair of opposed side panels and a pair of opposed face panels. The tube may be formed of a single face panel sheet and another sheet folded to integrally form an opposed face panel terminating laterally in opposed side panels; or alternatively, each of the face and side panels may be formed of a separate sheet. In the latter case, the lateral margins of both face panel sheets terminate substantially at the outer lateral extremities of the margin portions of the side panels and are secured in overlying relationship to these margin portions, to afford a double thickness of packaging material along the longitudinally-extending edges of the bag. In the former case, the double thickness is afforded only along the lateral margins of the single face panel sheet. The bottom end of the bag may subsequently be closed by a conventional process known as "automatic bottoming," or by "satchel" or "sewn" closures, as are well known in the art.

Where it is desired to afford still further protection, I laminate a number of pairs of side panels and face panels to form a multiple thickness bag. The number of plies of face panels may be equal to, or of a different number than, the number of plies of side panels. According to an optional feature of the invention, the various pairs of face panels and the margin portions of the various pairs of side panels are formed with differing widths, with the result that the joints between the side and face panels of the various layers are laterally offset one from another, and the strength of the bag is substantially increased.

In some instances, it is desired to afford further protection to the longitudinal ends of the bag. For this purpose, I provide a pair of reinforcing face panels which extend parallel to the face panels and laterally of the bag between the margins of opposite side panels. The reinforcing panels may extend from an end of the bag over only a portion of the length thereof, affording a trebled thickness of packaging material only at the end of the bag.

According to another optional feature, the bottom end of the package may be formed from longitudinal extensions of the side panels beyond the face panels, which extensions are folded transversely to the side and face panels. The extensions overlap laterally of the bag, and are secured upon each other and to the face panels to form a bottom end which provides a greater thickness of packaging material over the laterally-extending edges of the face panels than is available through conventional methods.

According to still another feature of the invention, a bag having laminated side or gusset panels may be provided with a layer of cushioning material, such as paper

or cloth scrim, interposed between the side panels of afford additional protection. The aforementioned features may be incorporated in whole or in part in the improved bag construction, as may be desired in specific applications.

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter which I regard as my invention, it is believed that the invention will be more clearly understood from the following detailed description of a preferred embodiment thereof, referring to the accompanying drawings, in which:

FIG. 1 is a pictorial view of elements of a bag according to a first embodiment of the invention, shown in a partially assembled condition;

FIG. 2 is a sectional plan view of the completed bag;

FIG. 3 is a view in elevation;

FIG. 4 is a pictorial view of the bag showing an alternative conventional form of end closure applied to the bag;

FIGS. 5 and 6 show another conventional form of end closure in different stages of formation;

FIG. 7 is a fragmentary pictorial view of a bag according to a modified form of the invention;

FIG. 8 is a sectional plan view of the bag of FIG. 7;

FIG. 9 is a sectional plan view of another modification;

FIG. 10 is a sectional plan view of still another modification of the invention;

FIG. 11 is a sectional plan view of an embodiment formed of a single face panel sheet and another sheet folded to form a face panel and two side panels; and

FIG. 12 is a sectional plan view of a modification of the bag of FIG. 11.

Referring to FIGS. 1–4, the invention may preferably be embodied in a bag comprising a pair of opposed gusset or side panel sheets **1** and a pair of opposed face panel sheets **2**. One of the face panels has been omitted from FIG. 1 to more clearly illustrate the construction. The side panels **1** are creased to form conventional gussets **3**, which permit the bag conveniently to be folded and stored prior to use. The side panels are formed with margin portions **4** which extend laterally of the bag, and the face panels **2** overlie these margins and terminate at their outer extremities at the longitudinal edges of the bag. The lateral margins of the face panels are secured to corresponding ones of the margin portions **4** by pasting, stitching, or in any well-known manner suitable to the particular material and intended application of the bag. A double layer of packaging material is thus formed over the longitudinally-extending edges of the composite bag.

In order to afford a multiple packaging layer over the laterally-extending edge margins of the face panels at the bottom end of the bag, I form the side panels **1** with extensions **5** which initially project longitudinally of the bag beyond the laterally-extending edges of the face panels, in the incomplete stage of construction shown in FIG. 1. The extensions **5** are formed with margin portions **6**, which are initially folded as shown, to extend laterally of the bag and parallel to the face panels. The margin portions **4** and **6** are cut away at **7** and **8**, respectively, to permit the extensions **5** to be folded upwardly into overlapping engagement, as shown in FIG. 3. The extensions are pasted or otherwise suitably secured one to the other, and to the interior surfaces of the face panels. The lower edges **9** of the extensions partially overlap laterally of the bag, to form a secure bottom end closure.

Alternatively, the ends of the bag may be closed by conventional methods as shown in FIG. 4, either end may be closed by forming closure flaps **10**, **11**, **12**, and **13** (FIG. 4), which are then pasted or otherwise secured to complete the package. The overlapping of the lateral margin portions of the side and face panels also affords

a multiple layer of material over the lateral edges of the end closure for increased protection of the packaged article. If a conventional form of closure is used at the bottom end of the bag, the side panels are interrupted flush with the laterally-extending edges of the face panels.

Another conventional type of end closure shown in FIGS. 5 and 6 may be applied to the improved bag tube to form a "satchel" bottom. In FIG. 5, the end of one face panel is initially folded upwardly at a reverse bend **16**, causing the ends of the side panels to form triangular flaps **17**. The side panels must be bent outwardly of the bag to form gussets **18**, rather than inwardly as in the embodiment of FIGS. 1–3. The ends of the face panels **2** are then doubled by bends **19** to form flaps **20** and **21**, which are overlapped and pasted to one another and to flaps **17** to complete the bottom closure.

Referring to FIGS. 7 and 8, a modification of the bag tube is shown, in which additional protection is afforded over the laterally-extending end margins of the face panels at an end of the bag. Elements similar to those of the embodiment of FIG. 1 are similarly numbered, with prime superscripts. In this modification, a pair of reinforcing face panel sheets **22** extend laterally of the bag between the outer extremities of the gusset or side panel sheets **1'**, and overlie internal surfaces thereof opposite the surfaces abutting the face panel sheets **2'**. The reinforcing panels extend only a portion of the length of the bag from the end, but afford a double panel thickness to the lateral end margins of the face panels over the full width thereof, rather than limiting the additional protection to the longitudinally-extending margins of the face panels as in the first embodiment.

Referring to FIG. 9, another modification shown in a sectional plan view includes a pair of reinforcing face panel sheets **25** which extend longitudinally over the full length of the bag, and a pair of reinforcing gusseted side panel sheets **26** which afford additional protection of the sides of the bag. In this laminated construction, the reinforcing face panels **25** directly abut a pair of face panels **27**, and the reinforcing side panels **26** directly abut a pair of side panels **28**. The lateral edges **29** of the face panels **27** extend to the outer extremities of margin portions **30** of the side panels **28**, while the lateral edges **31** of the reinforcing face panels **25** terminate at the inner edges of margin portions **30**. The inner marginal edges **32** of the reinforcing side panels **26** extend further toward the center of the bag. The resulting stepped or laterally-offset seam construction is characterized by increased effective seam strength and edge protection. As many layers of face and side panels may be laminated as may be desired for particular applications. The abutting margins of the panels are pasted or otherwise suitably secured.

In FIG. 10, a stepped-seam arrangement is shown in combination with a laminated cushion side panel construction. The lateral edges of margin portions **40** of a pair of side panel sheets **41** are interposed between corresponding ones of a pair of face panel sheets **42** and reinforcing face panel sheets **43**. Again, the lateral edges **44** and **45** of the face panels **42** and **43**, respectively, are laterally offset one from the other, and also from the lateral edges of margin portions **40** and **46** of the side panels **41** and reinforcing side panels **47**, respectively, to form a stepped-seam construction, as in the embodiment of FIG. 9. To afford additional protection for the sides of the bag, layers **48** of cushioning material are interposed between the side panels **41** and the reinforcing side panels **47**. The cushioning material may comprise fiber, cloth scrim, indented paper, polyurethene, or other suitable cushioning material, and is preferably pasted to the side panels. This construction affords increased protection not only of the faces and edges, but also of the sides of the bag.

Referring to FIGS. 11 and 12, modified embodiments are shown in which pairs of opposed side panels and one of the face panels are formed from a single sheet, and one of the face panels is formed from a separate sheet. Reinforcing protection is thus afforded only along the lateral margins of one face of the bag. In FIG. 11, two side panels **50** and one face panel **52** are formed from a single sheet, with margin portions **54** overlying the lateral margins of a face panel sheet **56**, which terminates at the outer lateral extremities of the side panels. In FIG. 12, a similarly-formed bag further includes a reinforcing face panel sheet **58**, and another sheet integrally forming a reinforcing face panel **60** and reinforcing side panels **62**, which overlap the corresponding face and side panels as shown. Elements corresponding to the elements of FIG. 11 are similarly numbered, with prime superscripts.

While I have shown and described preferred embodiments of my invention by way of illustration, it will be apparent to those skilled in the art that various changes and modifications may be made without departing from the true spirit and scope of the invention. While the embodiments shown in the drawings are formed with folded end closures, it will be apparent that stitched laterally-extending end seams may alternatively be applied to form a "sewn" end closure.

The use of separate face and side panel sheets facilitates the optional use of different materials in these panels. Furthermore, the improved bags may conveniently be formed from assemblies of continuous rolls of side panelling with pre-cut face panels; this permits printing or lithography of the face panels in a flat condition prior to assembly of the bags. The difficulty of registering cuts with previously printed material on a continuous roll of face panelling may thus be eliminated, and the printing or lithography simplified. Alternatively, however, the bags may be cut from assemblies of continuous rolls of side and face panels. My improved construction is applicable to various packaging materials, including plastics, papers, and textiles, or to combinations of such differing materials.

The present application is a continuation-in-part of my co-pending application Serial No. 75,206, filed December 12, 1960, now abandoned, and entitled "Reinforced Bag."

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. A bag comprising a pair of sheets forming opposed side panels, a pair of sheets forming opposed face panels, said side panels formed with longitudinally-extending margin portions overlying corresponding lateral margins of said face panels and secured thereto, said face panels extending laterally of said bag and terminating substantially at the outer lateral extremities of said margin portions of said side panels, and a pair of sheets forming reinforcing face panels secured in said bag and each extending laterally thereof interiorly adjacent to a corresponding one of said face panels.

2. A bag as recited in claim 1, in which said reinforcing face panels extend longitudinally of said bag only a portion of the length thereof.

3. A bag as recited in claim 1, in which said reinforcing face panels extend laterally of said bag only a portion of the width of said face panels and are directly secured thereto to form a stepped-seam construction.

4. A bag comprising a pair of sheet forming opposed side panels, a pair of sheet forming opposed reinforcing side panels each overlying a corresponding side panel interiorly, a pair of sheet forming opposed face panels, and a pair of sheet forming opposed reinforcing face panels each overlying a corresponding face panel interiorly, said side panels and said reinforcing side panels formed with longitudinally-extending margin portions each overlying corresponding lateral margins of said face panels and said reinforcing face panels and secured thereto, said face panels and said reinforcing face panels

extending laterally of said bag and terminating substantially at the outer lateral extremities of said margin portions of said side panels.

5. A bag as recited in claim 1, in which said side panels are formed with extensions folded transversely to the bag, each of said extensions overlapping and secured to the other extension and to adjacent longitudinal margins of said face panels to form an end closure of the bag.

6. A bag as recited in claim 4, together with a layer of cushioning material interposed between at least one of said panels and the overlying reinforcing panel corresponding thereto.

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