April 19, 1966 J. D. THOMPSON 3,246,832

BAG

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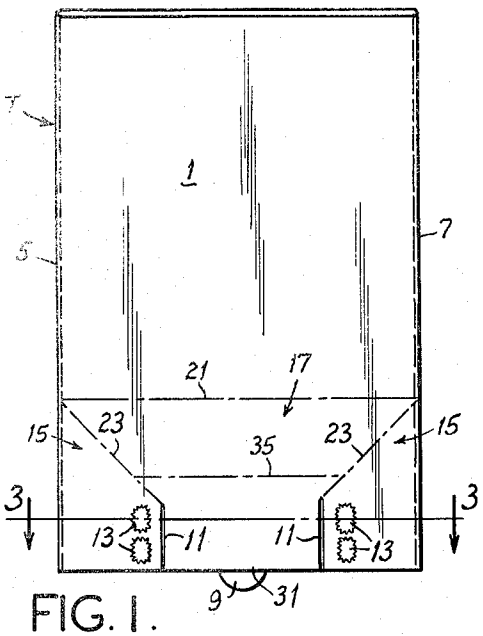

FIG. 1.

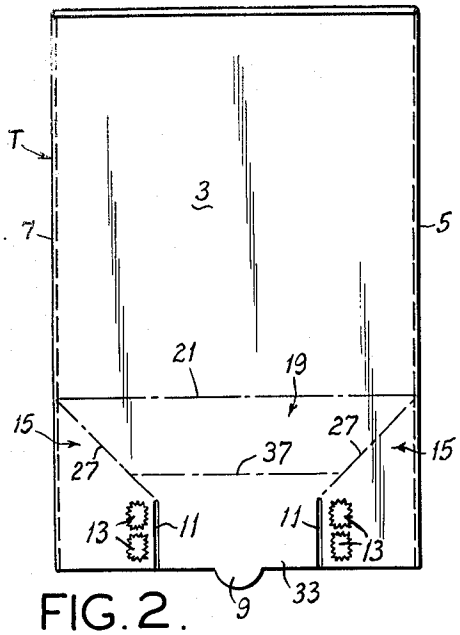

FIG. 2.

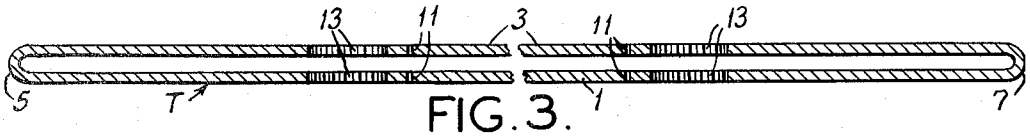

FIG. 3.

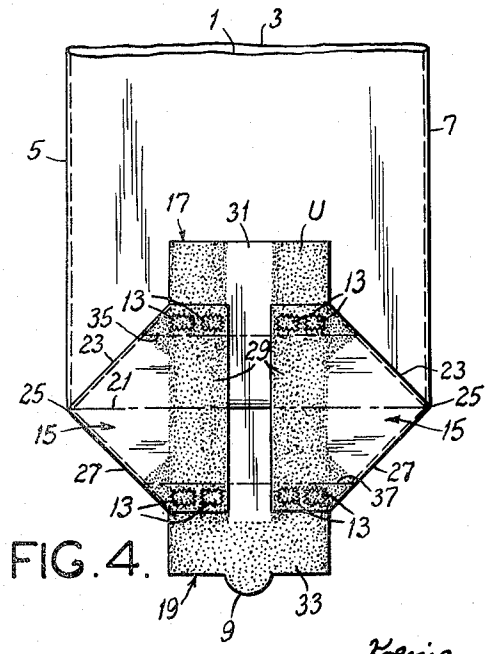

FIG. 4.

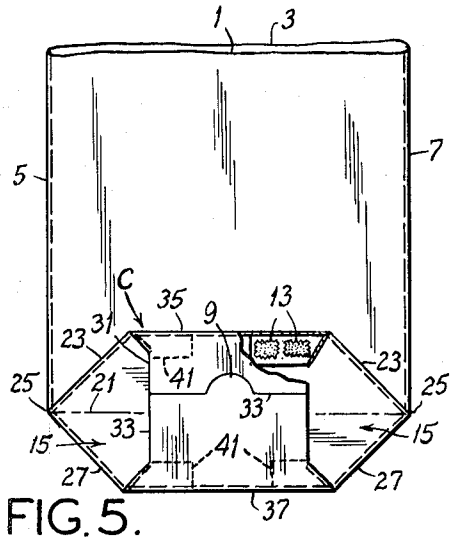

FIG. 5.

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BAG

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This invention relates to bags, and more particularly to open-mouth pasted-bottom paper bags.

A presently conventional type of open-mouth pasted-bottom paper bag used for packaging flour, sugar and similar finely divided material in five and ten pound quantities, for example, is formed from a flat tube having a single slit adjacent one bottom corner through both walls of the tube and a single slit adjacent the other bottom corner through both walls of the tube defining end flaps each having a triangular section and a rectangular extension and side flaps each having a trapezoidal section and a rectangular extension. The bottom is formed by folding back one of the side flaps to turn in the end flaps, applying adhesive (paste) to the opened-up bottom, folding one of the side flaps over on a transverse fold line spaced inward from one side edge of the rectangular end flap extensions, and then folding over the other side flap on a transverse fold line spaced inward from the other side edge of the rectangular end flap extensions. In this type of bag, wherein side marginal portions of the rectangular end flap extensions are folded over with the side flaps, there may be a tendency for the contents of the bag (particularly in the case of packaging of materials such as flour and sugar) to sift out at the corners of the bottom, due to nonadherence between portions of the side flaps adjacent the four bottom corners of the filled bag and the end flaps resulting from the interposition therebetween of the folded-over side marginal portions of the end flap extensions.

Accordingly, among the several objects of this invention may be noted the provision of a bag of the general class above described of improved construction such as to effect adherence between portions of the side flaps adjacent the four bottom corners of the bag and the end flaps despite the folding of side marginal portions of the end flap extensions to reduce the possibility of sifting, and the provision of a method of making bags with such improved construction. In general, the invention involves the provision of holes with serrated edges adjacent the side marginal portions of the end flap extensions, these apertured side marginal portions being folded over with the side flaps, and allowing for bleeding of adhesive for adherence between the portions of the side flaps adjacent the bottom corners and the end flaps. Other objects and features will be in part apparent and in part pointed out hereinafter.

The invention accordingly comprises the constructions and methods hereinafter described, the scope of the invention being indicated in the following claim.

In the accompanying drawings, in which one of various possible embodiments of the invention is illustrated,

FIG. 1 is a view in elevation of one face of a bag tube from which a bag of this invention is made;

FIG. 2 is a view in elevation of the other face of the FIG. 1 bag tube;

FIG. 3 is an enlarged section taken on line 3—3 of FIG. 1, broken away to reduce the width of the view;

FIG. 4 is a view similar to FIG. 1 showing how the lower end of the bag tube is opened up in forming the bottom and how adhesive is applied; and

FIG. 5 is a view showing the completed bottom, partly broken away to show internal detail.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings, FIGS. 1–3 show a flat paper bag tube T from which a bag of this invention is made. This tube is usually a single-ply tube, i.e., made of a web of paper consisting of one layer, but may be a multi-ply tube. One wall of the flat tube T is designated 1 and the other wall of the tube is designated 3. The side edges of the tube are constituted by longitudinal fold lines 5 and 7. It will be understood that the tube conventionally has a pasted longitudinal seam, but this has been omitted from the drawings to avoid unnecessary detail. Wall 3 of the tube is shown as having a tab 9 projecting centrally at its lower end.

The tube T is provided at that end (its lower end) where the bottom closure is to be formed with a slit 11 adjacent one corner at said end and a similar slit 11 adjacent the other corner at said end. These slits are cut through both walls of the tube extending inward (upward) from its lower end. Immediately outward of these slits, the tube T is provided with serrated-edge holes 13, two such holes being shown outward of each slit. These holes are cut through both walls of the tube. The shape of the holes is not critical, but it is important that their edges be serrated.

The slits 11 define two end flaps 15 for the opposite ends of the bottom closure to be formed and first and second side flaps 17 and 19. In forming the bottom closure, as shown in FIG. 4, the lower portion of the wall 1 of the tube is folded back on a transverse fold line 21 to effect opening up of the first side flap and turning in of the two end flaps 15, with accompanying folding of wall 1 on lines 23 extending at an angle of 45° from points 25 on the side edges 5 and 7 of the tube to the inner ends of slits 11 in wall 1, and folding of wall 3 on lines 27 extending at an angle of 45° from points 25 to the inner ends of slits 11 in wall 3.

Each end flap 15, turned in as above described, has a triangular section as to which point 25 is the apex and a rectangular extension 29 projecting inward from the base of the triangular section. Side flap 17 has a trapezoidal section bounded at the ends by lines 23 and a rectangular extension 31 projecting from the narrow end of the trapezoidal section. Similarly, side flap 19 has a trapezoidal section bounded at the ends by lines 27 and a rectangular extension 33 projecting from the narrow end of the trapezoidal section. Each rectangular end flap extension 29 has a pair of the serrated-edge holes 13 at each side margin thereof.

Adhesive (paste) is applied to the opened-up flaps in a pattern such as the U-shaped pattern indicated at U in FIG. 4 with the base of the U extending across extension 33 of side flap 19 and the sides of the U extending over end flap extensions 29 and the end portions of extension 31 of side flap 17. Side flap 17 is folded over on a transverse fold line 35 which, as shown in FIG. 4, lies inward of the serrated-edge holes 13 in the end flap extensions 29 adjacent the upper side edges of extensions 29 to overlie the end flaps 15. Then, side flap 19 is folded over on a transverse fold line 37 which, as shown in FIG. 4, lies inward of the serrated-edge holes 13 adjacent the lower side edges of extensions 29 to overlie the side flap 17, thereby completing formation of the bottom closure, which is designated C in FIG. 5.

As a result of the above-described operations, the bottom closure C comprises the inwardly directed end flaps 15 each having a triangular section and a rectangular extension 29 at its inner end, with first side flap 17 folded over on transverse fold line 35 to overlie the end flaps and second side flap 19 folded over on transverse fold line 37 to overlie the first side flap 17. Line 35 is spaced inward from holes 13 lying adjacent one side edge of end flap extensions 29 and line 37 is spaced inward from holes 13 lying adjacent the other side edge of extensions

29, so that the folded-over portions of the end flap extensions 29 which lie between the side flaps and the end flaps include the holes 13. Adhesive bleeds through the holes for adherence between regions of the side flaps 17 and 19 such as indicated in phantom at 41 in FIG. 5 (the regions about the holes 13) and the end flaps. This reduces the possibility of sifting out of the contents of the filled bag between the folded-over side marginal portions of the end flap extensions and the side flaps. The provision of serrated edges for the holes 13 has been found to allow for much better bleeding of adhesive for this purpose than in the case of holes with nonserrated edges.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions and methods without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

A paper bag having a bottom closure comprising inwardly directed end flaps each having a triangular section and a rectangular extension at its inner end, a first side flap folded over on a transverse fold line spaced inward from one side edge of the rectangular end flap extensions overlying the end flaps and adhered thereto, and a second side flap folded over on a transverse fold line spaced inward from the other side edge of the rectangular end flap extensions overlying the first side flap and adhered thereto and to the end flaps, side marginal portions of said rectangular end flap extensions being folded over with said side flaps, and each of said folded-over side marginal portions of said rectangular end flap extensions having at least one serrated-edge hole therein for bleeding of adhesive through said holes to those regions of the side flaps where said side marginal portions of said rectangular end flap extensions are interposed between the side flaps and the end flaps.

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