Sept. 15, 1959 E. S. GORTON ET AL 2,904,241

BAG

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FIG. 1.

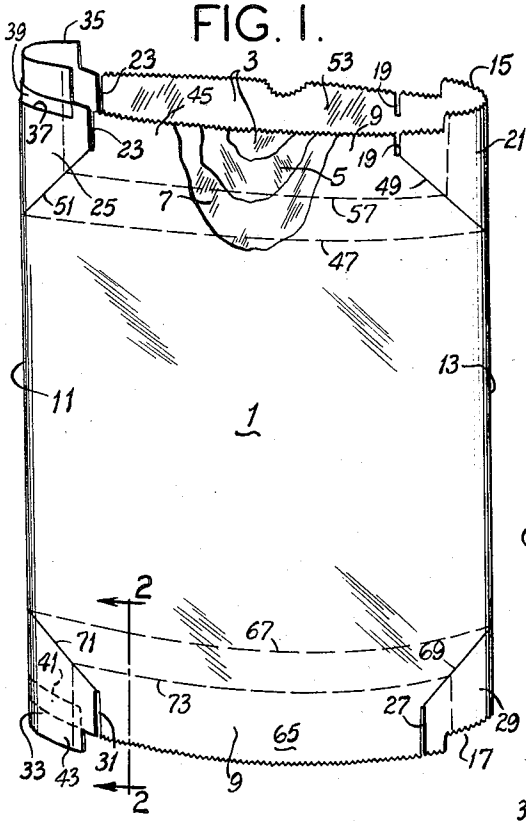
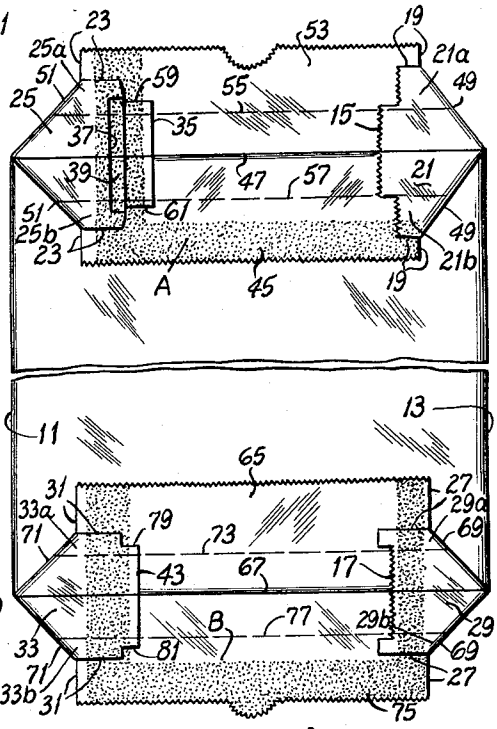


FIG. 3.



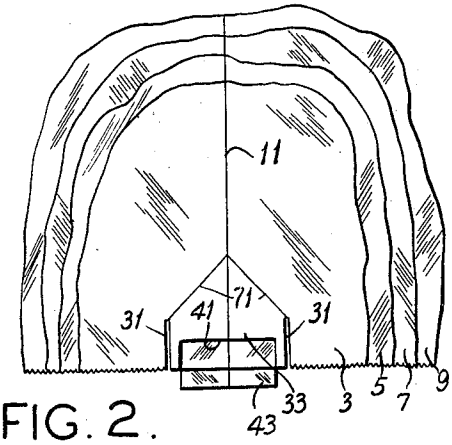
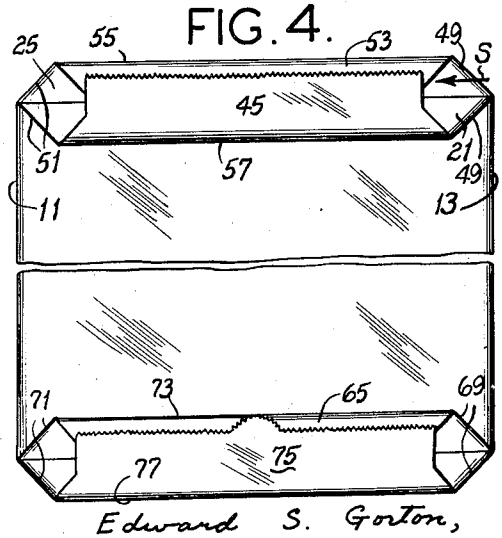


FIG. 2.

FIG. 4.



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BAG

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Application September 3, 1957, Serial No. 681,750

6 Claims. (Cl. 229—62.5)

This invention relates to bags, and more particularly to a multiwall pasted valve bag of a type used for packaging finely divided material, such as Portland cement, the bag being filled by inserting a filling spout in the valve and delivering the finely divided material through the spout into the bag.

Among the several objects of the invention may be noted the provision of a multiwall pasted valve bag having an improved closure construction at the corner of the bag opposite the valve which effectively prevents the finely divided material from blowing in between the bag plies at said corner; the provision of such a construction which avoids undue stiffening of the pasted closure at said corner; and the provision of a bag with a closure construction such as described which is strong and economical to manufacture. Other objects and features will be in part apparent and in part pointed out hereinafter.

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

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

Fig. 1 is a perspective view of a multiwall paper bag tube from which a multiwall bag of this invention is made, the tube being shown as spread open to some extent rather than in its normally flat condition;

Fig. 2 is a view of the inside of the lower left corner of the bag with the corner spread open, taken on line 2—2 of Fig. 1;

Fig. 3 is a view in elevation showing a step in the formation of pasted top and bottom closures on the Fig. 1 tube; and,

Fig. 4 is a view in elevation of a completed bag.

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

Referring to the drawings, Fig. 1 shows a flat multiwall paper bag tube 1 from which a multiwall bag of this invention is made. As shown, this tube is a four-ply tube, its inner ply being designated 3, the next two plies 5 and 7, and the outer ply 9 (see Figs. 1 and 2). The side folds of the flat tube 1, which constitute its side edges, are designated 11 and 13. As herein illustrated, a valve is to be provided at the top right corner of the tube as viewed in Fig. 1. The tube is provided at this corner with a relatively short integral extension 15 of all four plies of the tube. This extension is centrally folded on a fold which is coincident with the right side fold 13 of the tube. When unfolded flat, the extension 15 has a total width somewhat greater than the width of the pasted end closure which is to be formed at the upper end of the tube 1.

At the lower right corner of the tube (as illustrated in Fig. 1) there is a cutout 17. It will be understood that bag tubes such as the tube 1 shown in Fig. 1 are manufactured in commercial production by segmenting a continuous length of bag tubing into individual tubes 1. One way of providing extension 15 on each of the tubes

1 segmented from the continuous length of tubing is to cut the material for the extension 15 of any given tube 1 out of the adjacent end of the adjacent tube segmented from the continuous length of tubing. This leaves cutout 17 at the other end of each tube from the end with the extension 15 (see Fig. 1).

The tube 1 is provided at its upper end adjacent the valve corner with longitudinal slits 19 defining an end closure flap 21 for the right (valve) end of the bag top. The tube 1 is further provided adjacent the corner opposite the valve corner (the upper left corner as viewed in Fig. 1) with longitudinal slits 23 defining end closure flap 25 for the other end of the bag top. At its lower end, the tube is provided adjacent the corner having the cutout 17 with longitudinal slits such as indicated at 27 defining end closure flap 29 for the right end of the bag bottom, and adjacent the other lower corner with longitudinal slits such as indicated at 31 defining end closure flap 33 for the other end of the bag bottom.

At its upper end, the tube is provided at the corner opposite the valve corner with a relatively long extension 35 of the inner ply 3 only and with a cutout or notch 37 in the outer ply only. The extension 35 and cutout 37 are of approximately the same width, this being at least equal to the width of the top closure which is to be formed but less than the width of the inner end edge of the end flap 25 (which is determined by the distance between the slits 23 measured around the upper margin of the bag). The cutout 37 exposes a portion 39 of the ply 7 which lies under the outer ply.

At the lower left corner of the tube (as illustrated in Figs. 1 and 2), there is a cutout or notch 41 in the inner ply 3 having the same outline as the extension 35 and an extension 43 of the outer ply 9 having the same outline as the cutout 37. As previously stated, it will be understood that bag tubes such as the tube 1 shown in Fig. 1 are manufactured in commercial production by segmenting a continuous length of bag tubing into individual tubes 1. One way of providing extension 35 on the inner ply of each of the tubes 1 segmented from the continuous length of tubing is to cut the material for the extension 35 of any given tube 1 out of the adjacent end of the inner ply of the adjacent tube segmented from the continuous length of tubing. This leaves cutout 41 in the inner ply at the other end of each tube from the end with the extension 35 (see Figs. 1 and 2). Similarly, one way of providing notch 37 in the outer ply of each of the tubes 1 segmented from the continuous length of tubing is to cut the notch in the outer ply of each tube, the material bounded by the cut forming extension 43 on the adjacent end of the outer ply of the adjacent tube segmented from the continuous length of tubing.

In forming the closure at the valve end of the bag tube (its upper end as illustrated), a side flap 45 is folded back upon the tube upon a fold line 47 extending transversely with respect to the length of the tube. This operation effects turning in of the end flaps 21 and 25, these flaps folding on lines indicated at 49 and 51 extending from the side edges of the tube to the inner ends of the slits 19 and 23. Upon turning in the flap 25, the extensions 35 of the inner ply is opened and spread flat. Adhesive (paste), designated A, is then applied in the pattern shown in Fig. 3, the pattern consisting of a stripe of adhesive extending transversely across the side flap 45 and a stripe extending in lengthwise direction with respect to the tube from side flap 45 and over the inner end of the end flap 25 and the extension 35 to the upper end edge of the bag tube. A side flap 53 is then folded over upon a transverse fold line 55 to overlie the end flaps 21 and 25. To complete the formation of the closure, the side flap 45 is then folded over upon a transverse fold line 57 to overlap the flap 53. Fold line 55 is within one side

edge 59 of the extension 35; fold line 57 is within the other side edge 61 of the extension 35. Portions 21*a* and 25*a* of the end flaps 21 and 25 lying outward of line 55 are folded over with and included in side flap 53; portions 21*b* and 25*b* of the end flaps lying outward of line 57 are folded over with an included in side flap 45.

In forming the closure at the bottom of the bag tube, a side flap 65 is folded back upon the tube upon a fold line 67 extending transversely with respect to the length of the tube. This operation effects turning in of the flaps 29 and 33, these flaps folding on lines indicated at 69 and 71 extending from the side edges of the tube to the inner ends of the slits 27 and 31. Upon turning in the flap 33, the extension 43 of the outer ply is opened and spread flat. Adhesive (paste), designated B, is then applied in the pattern shown in Fig. 3, the pattern consisting of a stripe of adhesive extending transversely across the as yet unfolded end portion of the tube and stripes extending in lengthwise direction with respect to the tube from the transverse stripe and over the inner ends of the end flaps 29 and 33 (including the extension 43) to the side flap 65. The side flap 65 is then folded over upon a transverse fold line 73 to overlie the end flaps 29 and 33. To complete the formation of the closure, a side flap 75 is then folded over upon a transverse fold line 77 to overlap the flap 65. Fold line 73 is within one side edge 79 of the extension 43; fold line 77 is within the other side edge 81 of the extension 43. Portions 29*a* and 33*a* of the end flaps 29 and 33 lying outward of line 73 are folded over with and included in side flap 65; portions 29*b* and 33*b* of the end flaps lying outward of line 77 are folded over with and included in side flap 75.

As a result of the above operations, and with respect to the top closure, the side flap 53 becomes adhered to the end flap 25, to the exposed portion 39 of ply 7 in end flap 25, and to the extension 35 of the inner ply included in the end flap 25. It does not, however, become adhered to the end flap 21. The side flap 45 becomes adhered to the side flap 53. The completed closure comprises the inwardly directed end flaps 21 and 25 and the side flaps 53 and 45 folded over on the transverse fold lines 55 and 57 to overlap one another and to overlie the end flaps. The edges of all the plies in the side flaps 53 and 45 are in register. The side flaps 53 and 45 are adhered together by the stripe of paste initially applied to extend transversely across the flap 45. The adhered-together side flaps 53 and 45 are free of the end flap 21 to provide a valve capable of accepting a filling spout inserted as indicated by the arrow S in Fig. 4. The flap 53 and the extension 35 of the inner ply at the corner opposite the valve are adhered together, accomplishing the dual result of preventing finely divided material delivered through the spout from blowing in between the plies of the bag at the corner opposite the valve and securing the flap 53 to the inner ply to strengthen the closure without any requirement for heavy inter-ply pasting at said corner. Also, the flap is adhered to the portion 39 of the intermediate ply 7 exposed in the cutout 37 for closure-strengthening purposes (without undue stiffening of the closure at said bag corner).

As a result of the above operations, and with respect to the bottom closure, the side flap 65 becomes adhered to the end flaps 29 and 33, and the side flap 75 becomes adhered to the side flap 65. The completed bottom closure comprises the inwardly directed end flaps 29 and 33 and the side flaps 65 and 75 folded over on the transverse fold lines 73 and 77 to overlap one another and to overlie the end flaps. The edges of all the plies in the side flaps 65 and 75 are in register. The side flaps 65 and 75 are adhered together by the stripe of paste initially applied to extend transversely across the flap 75.

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 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.

We claim:

1. A multiwall paper bag having at least three plies and provided at its ends with closures, one of said closures comprising inwardly directed end flaps, a first side flap folded over on a transverse fold line to overlie the end flaps, and a second side flap folded over on a transverse fold line to overlie the first side flap, one of the end flaps of said one closure having a centrally located inwardly directed extension of the inner ply only, and a cutout in the outer ply, said extension having a width at least equal to that of said one closure but less than that of the inner end edge of said one end flap, the first side flap of said one closure being adhered to the extension and adhered to the portion of the next to the outer ply exposed in the cutout, the side flaps being adhered together but being free of the other end flap of said one closure to provide a valve.

2. A multiwall paper bag having at least three plies and provided at its ends with pasted closures, each comprising inwardly directed end flaps, a first side flap folded over on a transverse fold line to overlie the end flaps, and a second side flap folded over on a transverse fold line to overlie the first side flap, one of the end flaps at one end of the bag having a centrally located inwardly directed extension of the inner ply only, and a cutout in the outer ply, said extension and said cutout having a width at least equal to that of the closure but less than that of the inner end edge of said one end flap, the first side flap at said one end of the bag being pasted to the extension and pasted to the portion of the next to the outer ply exposed in the cutout, the side flaps at said one end of the bag pasted together but being free of the other end flap at said one end of the bag to provide a valve, the end flap at the other end of the bag from said one end flap having an extension of its outer ply and a cutout in its inner ply corresponding to the cutout and extension of the first-mentioned end flap.

3. A multiwall paper bag having at least three plies and provided at its ends with closures, one of said closures comprising inwardly directed end flaps defined by longitudinal slits at the respective end of the bag, a first side flap folded over on a transverse fold line to overlie the end flaps, and a second side flap folded over on a transverse fold line to overlie the first side flap, one of the end flaps of said one closure having a centrally located inwardly directed extension of the inner ply only, and a cutout in the outer ply, said extension and said cutout having a width at least equal to that of the closure but less than that of the inner end edge of said one end flap as defined by the slits which define said one end flap, said extension and cutout being of approximately equal width, said transverse fold lines being located within the side edges of the extension, the first side flap of said one closure being adhered to the extension and adhered to the portion of the next to the outer ply exposed in the cutout, the side flaps being adhered together but being free of the other end flap of said one closure to provide a valve.

4. A multiwall paper bag having at least three plies and provided at its ends with pasted closures, each comprising inwardly directed end flaps defined by longitudinal slits at the respective end of the bag, a first side flap folded over on a transverse fold line to overlie the end flaps, and a second side flap folded over on a transverse fold line to overlie the first side flap, one of the end flaps at one end of the bag having a centrally located inwardly directed extension of the inner ply only, and a cutout in the outer ply, said extension and said cutout having a width at least equal to that of the closure but less than that of the inner end edge of said one end flap as defined by the slits which define said one end flap,

said extension and cutout being of approximately equal width, said transverse fold lines of the closure at said one end of the bag being located within the side edges of the extension, the first side flap at said one end of the bag being adhered to the extension and adhered to the portion of the next to the outer ply exposed in the cutout, the side flaps at said one end of the bag being pasted together but being free of the other end flap at said one end of the bag to provide a valve, the end flap at the other end of the bag from said one end flap having an extension of its outer ply and a cutout in its inner ply corresponding to the cutout and extension of the first-mentioned end flap.

5. A multiwall paper bag having at least three plies and provided at its ends with closures, one of said closures comprising inwardly directed end flaps defined by longitudinal slits at the respective end of the bag, a first side flap folded over on a transverse fold line to overlie the end flaps, and a second side flap folded over on a transverse fold line to overlie the first side flap, the edges of all the plies in the side flaps being in register, one of the end flaps of said one closures having a centrally located inwardly directed extension of the inner ply only, and a cutout in the outer ply, said extension and said cutout having a width at least equal to that of the closure but less than that of the inner end edge of said one end flap as defined by the slits which define said one end flap, said extension and cutout being of approximately equal width, said transverse fold lines being located within the side edges of the extension, the first side flap of said one closure being adhered to the extension and adhered to the portion of the next to the outer ply exposed in the cutout, the side flaps being adhered together but being free of the other end flap of said one closure to provide a valve.

6. A multiwall paper bag having at least three plies and provided at its ends with pasted closures, each comprising inwardly directed end flaps defined by longitudinal slits at the respective end of the bag, a first side flap folded over on a transverse fold line to overlie the end flaps, and a second side flap folded over on a transverse fold line to overlie the first side flap, the edges of all the plies in the side flaps being in register, one of the end flaps at one end of the bag having a centrally located inwardly directed extension of the inner ply only, and a cutout in the outer ply, said extension and said cutout having a width at least equal to that of the closure but less than that of the inner end edge of said one end flap as defined by the slits which define said one end flap, said extension and cutout being of approximately equal width, said transverse fold lines of the closure at said one end of the bag being located within the side edges of the extension, the first side flap at said one end of the bag being adhered to the extension and adhered to the portion of the next to the outer ply exposed in the cutout, the side flaps at said one end of the bag being pasted together but being free of the other end flap at said one end of the bag to provide a valve, the end flap at the other end of the bag from said one end flap having an extension of its outer ply and a cutout in its inner ply corresponding to the cutout and extension of the first-mentioned end flap.

References Cited in the file of this patent

UNITED STATES PATENTS

2,346,292	Coty	Apr. 11, 1944
2,668,003	Jones	Feb. 2, 1954
2,729,387	Brady et al.	Jan. 3, 1956
2,810,509	Gelbcke	Oct. 22, 1957