

July 27, 1965

R. E. HARTIG ET AL

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BAGS

Filed July 2, 1963

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FIG. 1.

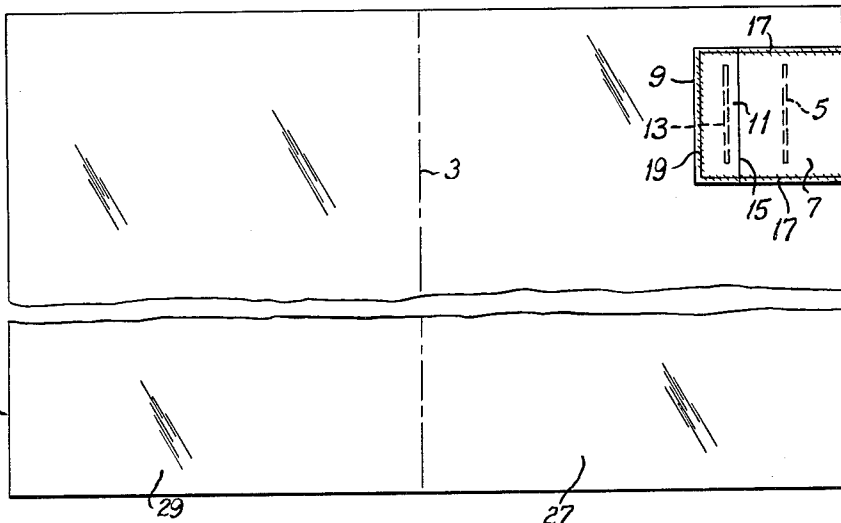


FIG. 2.

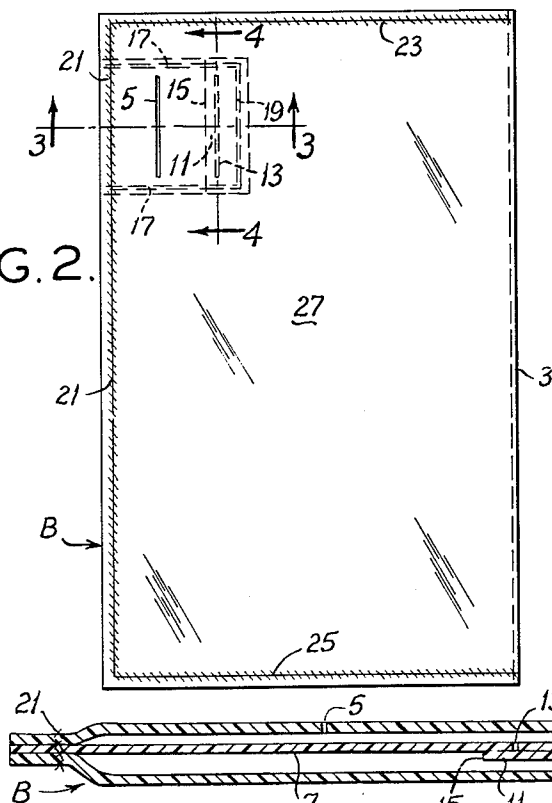


FIG. 3.

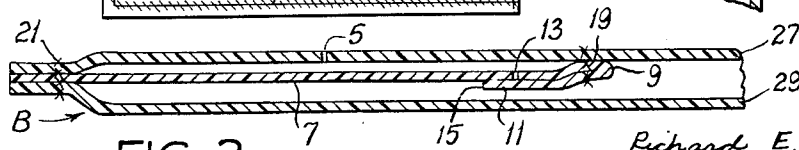
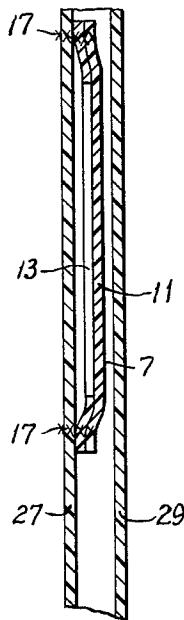


FIG. 4.



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July 27, 1965

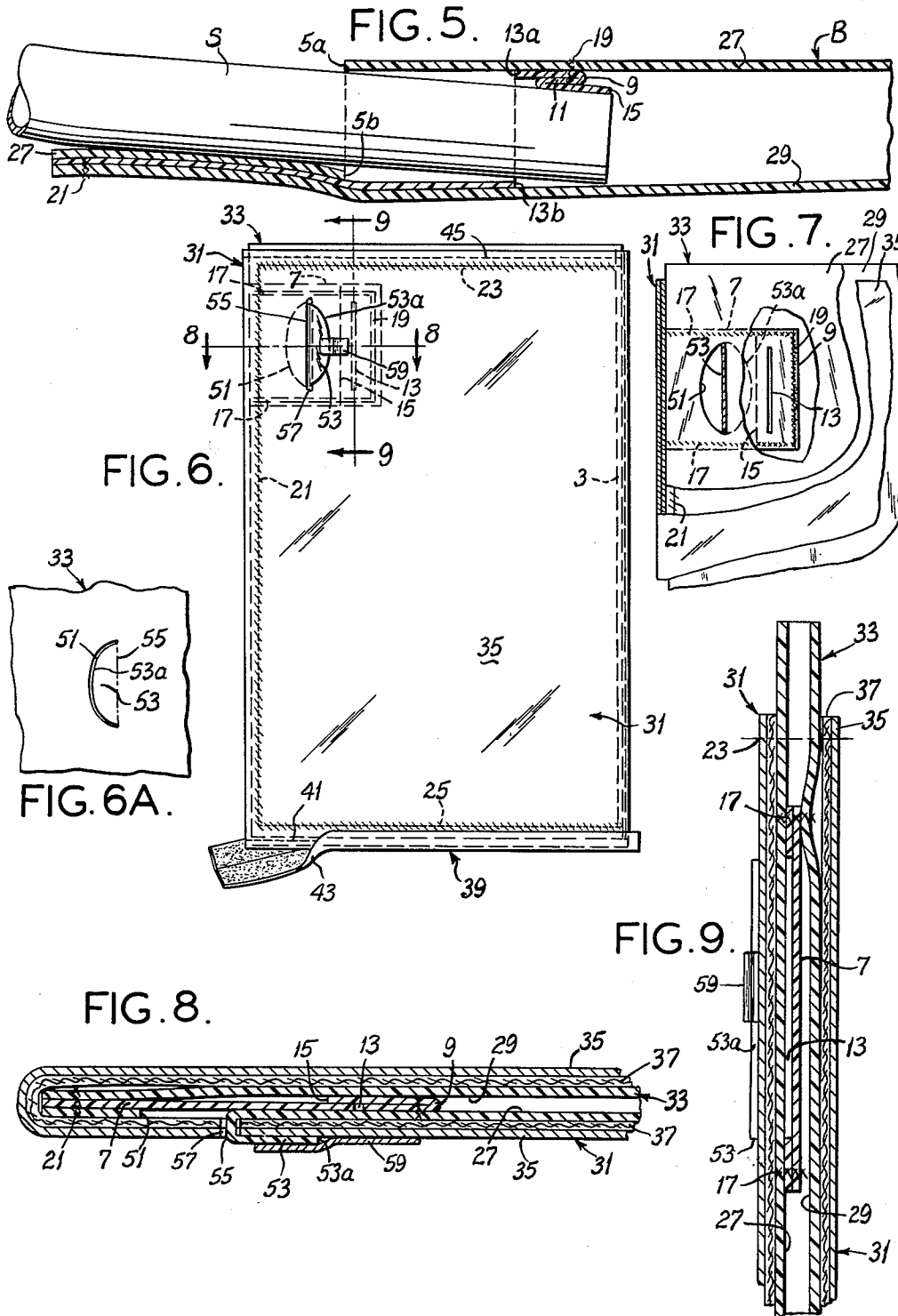
R. E. HARTIG ETAL

3,197,119

BAGS

Filed July 2, 1963

3 Sheets-Sheet 2



July 27, 1965

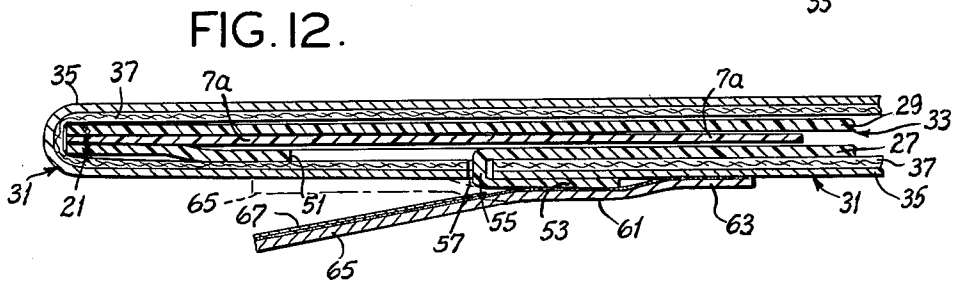
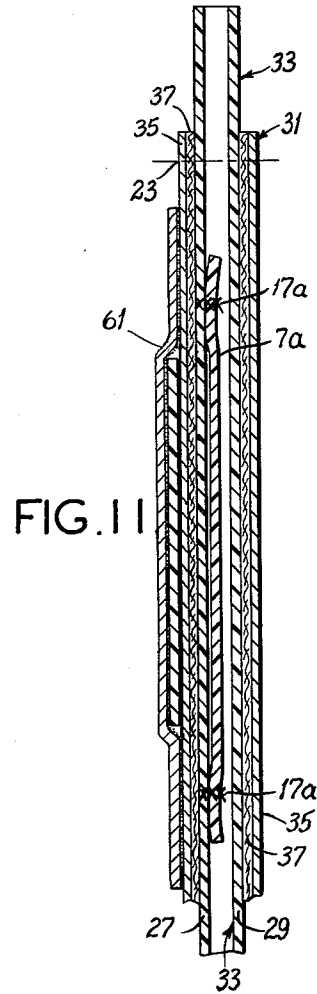
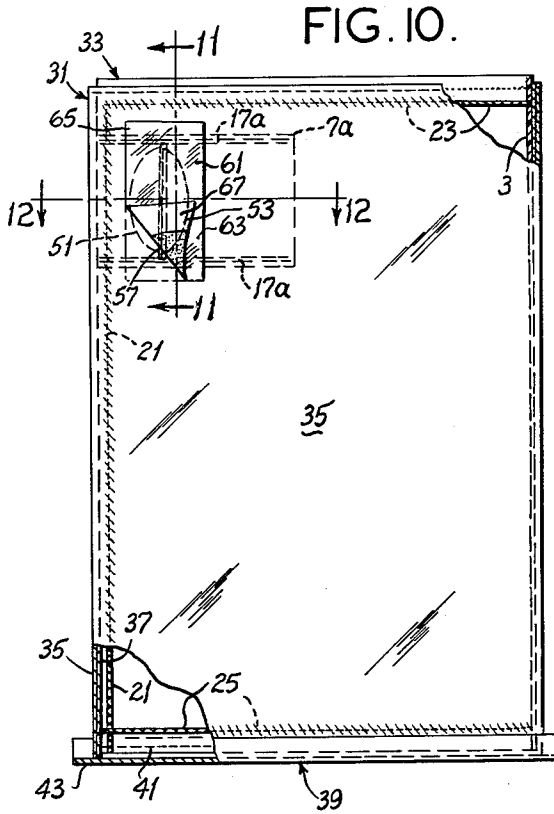
R. E. HARTIG ET AL

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Filed July 2, 1963

3 Sheets-Sheet 3



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3,197,119
BAGS

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Filed July 2, 1963, Ser. No. 292,318
9 Claims. (Cl. 229-62.5)

This invention relates to bags, and more particularly to heavy duty plastic or plastic-lined valve bags.

Among the several objects of the invention may be noted the provision of valve bags of the class described having a valve construction of the type comprising an opening in a wall of the bag for reception of a filling spout to fill the bag, and provided with means for effectively sealing the opening after the bag has been filled and taken off the spout; the provision of a single ply plastic bag such as described, made of heat-sealable sheet plastic material; and the provision of a multi-ply bag such as described having an outer body of fabric (such as cotton fabric or burlap), paper, asphalt-laminated paper and burlap, or plastic, and a liner of heat-sealable plastic. 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 several of various possible embodiments of the invention are illustrated,

FIG. 1 is a view of a rectangular bag blank of heat-sealable plastic prior to folding and heat-sealing to form a single-ply plastic bag, showing a valve component secured thereto;

FIG. 2 is a view of the single-ply valve bag formed from the FIG. 1 blank;

FIG. 3 is an enlarged section taken on line 3-3 of FIG. 2;

FIG. 4 is an enlarged section taken on line 4-4 of FIG. 2;

FIG. 5 is an enlarged section similar to FIG. 3 showing a filling spout entered for filling the bag;

FIG. 6 is a view of another embodiment of the invention having a liner positioned within an outer bag body;

FIG. 6A is a fragmentary view of the liner per se used in the FIG. 6 bag, showing the initial form of a slit therein;

FIG. 7 is a fragment of FIG. 6 with parts broken away to show detail;

FIG. 8 is an enlarged section taken on line 8-8 of FIG. 6;

FIG. 9 is an enlarged section taken on line 9-9 of FIG. 6;

FIG. 10 is a view of another embodiment of the invention;

FIG. 11 is an enlarged section taken on line 11-11 of FIG. 10; and

FIG. 12 is an enlarged section taken on line 12-12 of FIG. 10.

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

Referring to FIG. 1 of the drawings, there is indicated at 1 a rectangular bag blank of flexible heat-sealable sheet plastic material, such as polyethylene, adapted to be folded in half on a heightwise central fold line indicated at 3 and to be heat-sealed along its side opposite the fold and along its top and bottom to form a bag. As shown in FIG. 1, the blank is provided with an opening in the form of a straight slit 5 extending heightwise adjacent its upper right corner. Overlying this slit 5 on that face of the blank which is on the inside when the blank

2

is folded is a patch 7. This patch consists of a rectangular piece of flexible heat-sealable sheet plastic material having an end portion folded over the body portion of the patch on a transverse fold line 9 to form a flap 11. Patch 7 has an opening in the form of a straight transverse slit 13 adjacent the fold 9, located between the edge 15 of flap 11 and the fold 9.

As appears in FIG. 1, the patch 7 extends inward from the right edge of the bag blank adjacent the upper right corner of the blank, overlying the slit 5. Flap 11 is located on the outside of the patch, away from the blank. The patch, in its folded condition, is heat-sealed to the blank along its side edges as indicated at 17 and adjacent fold 9 as indicated at 19. This seals the side margins of the flap to the side margins of the patch.

FIG. 2 shows a completed bag B formed by folding the blank 1 in half on fold line 3 (which constitutes one side edge of the bag) and by heat-sealing the margins of the folded blank opposite the fold as indicated at 21 to form a side seam and by heat-sealing the margins of the folded blank at top and bottom to form top and bottom seams 23 and 25. The outer end of patch 7 is heat-sealed in the side seam 21 (see FIG. 3), the patch extending inward from side seam 21 between the walls of the bag. These walls are designated 27 and 29, wall 27 being the wall having slit 5 therein and having patch 7 attached thereto.

In the completed bag B as shown in FIGS. 2-4, patch 7 underlies the slit 5 in wall 27, and has its margins (including the margins of flap 11) secured to wall 27 at 17, 19 and 21. Slit 13 in the patch is spaced inward from slit 5 in wall 27 along the length of the patch (slit 13 being located toward the inner end of the patch). Flap 11 extends back from the inner end 9 of the patch on the opposite face of the patch from wall 27, underlying the patch and over-lapping the slit 13 in the patch.

As shown in FIG. 5, a filling spout S is adapted for entry through slit 5 in wall 27, passing between wall 27 and the portion of the patch from slit 5 to slit 13, and then through slit 13 between flap 11 and wall 29 of the bag. Slit 5 opens up by spreading apart of edges 5a and 5b of the wall 27 which define the slit 5. Slit 13 opens up by spreading apart of edges 13a and 13b of the patch which define the slit. Edge portion 15 of flap 11, which initially extended outward beyond the slit 13, is free to spread away from edge 13b (which is the outer edge of slit 13) to permit entry of the spout.

When the bag has been filled through the spout, and taken off the spout (or the spout withdrawn), the patch 11 flattens out to close the slit 5 in wall 27, and flap 11 reverts to its initial position overlapping slit 13 in the patch to function as means for closing the slit 13. The patch is preferably made of a flexible sheet plastic material which, while being thinner than the bag material, is less elastic than the bag material. For example, the bag material may be low density sheet polyethylene having a thickness of five mils, and the patch may be made of an olefin polymer such as that sold under the trade designation Marlex TR101 by Phillips Chemical Co. of Bartlesville, Oklahoma, having a thickness of three mils. Accordingly, when the bag is filled, the patch becomes tightly stretched and slits 13 and 5 are effectively closed to minimize escape of the bag contents therethrough.

As appears in FIG. 2, the patch 7 is spaced to some extent from the upper end of the bag. It has been found that a better closing action of the patch is obtained with the patch so spaced from one end of the bag rather than being located at an end of the bag.

While as shown in FIGS. 1-5, the bag is made from a folded blank, it will be understood that it is possible for the bag to be made from a length of tubing (seamless or seamed tubing), the patch being inserted in one end of

the tubing and heat-sealed to one wall of the tubing with its outer end caught in the transverse heat-sealed seam made at the end of the tubing.

FIGS. 6-9 illustrate a multi-ply bag of this invention comprising an outer bag body 31 in which there is provided a liner 33. The outer bag body 31, as shown, is made of conventional asphalt-laminated paper and burlap plies, the paper ply (which is on the outside) being indicated at 35 and the burlap ply being indicated at 37. It will be understood that the outer bag body may be made of a textile fabric per se, such as a cotton fabric or burlap, or of paper per se, or even of a sheet plastic material such as polyethylene. Liner 33 comprises a bag which is the same as bag B shown in FIG. 2 except for a modification of the slit 5 as will be made clear, and which has a patch 7 the same as shown in FIGS. 1-5. The outer bag body simply comprises a length of bag tubing made in conventional manner. This is provided with a conventional bottom closure, as indicated at 39. Liner 33 is inserted in the outer bag body, prior to formation of a top closure, and then the latter is formed in conventional manner. Usually, the bottom closure 39 is a stitched closure, the stitching being indicated at 41 in FIG. 6 with a closure tape 43 adhered over the stitching. The top closure will usually also be a stitched closure as indicated at 45, the stitching being driven through the upper margin of the liner 33 above the upper seal 23 of the liner. A closure tape like tape 43 may be provided for the top closure.

Instead of having a straight slit like slit 5 shown in FIG. 2, wall 27 of the liner 33 is initially provided with a slit or cut 51 of tab-defining outline. FIG. 6A shows the liner with slit 51 as initially cut therein. As shown, this slit 51 is of arcuate shape, convex as viewed from the outer end of the patch, the resultant tab 53 thereby having an arcuate free edge 53a toward the outer end of the patch. The tab is adapted to be folded back along a line 55 extending transversely with respect to the patch between the ends of the slit. The outer bag body has an opening in the form of a slit 57 generally in register with line 55, and in assembling the liner with the outer bag body, the tab is extended out through the slit 57 and folded back around the edge of the outer bag body which defines the inner edge of slit 57 to overlie the outside of the outer bag body. The tab is then secured to the outside of the outer bag body in any suitable manner, as by means of a piece of pressure-sensitive adhesive tape 59. The filling spout is adapted to be entered through slit 57 in the outer bag body, and thence through slit 51 in the liner and slit 13 in the patch 7, in a manner similar to that shown in FIG. 5. The tab 53, protruding through the slit 57 in the outer bag body and folded around the inner edge of the slit (the right-hand edge of the slit as appears in FIGS. 6 and 8), minimizes fouling when the spout is inserted.

FIGS. 10-12 illustrate another multi-ply bag constructed in accordance with this invention which is similar to the bag shown in FIGS. 6-9 except for a modification of the patch and a modification of the mode of securing of the tab which extends through the slit 57 in the outer bag body 31. In FIGS. 10-12 the patch is designated 7a. It consists simply of a rectangular piece of flexible heat-sealable sheet plastic material heat-sealed at its outer end in the side seam 21 of the liner 33 and heat-sealed along its side margins to wall 27 of the liner as indicated at 17a, but having its inner end unattached to wall 27 and open for entry of a filling spout. Patch 7a does not have a slit or flap such as shown for patch 7. The tab 53 of liner 33 of the bag shown in FIGS. 10-12 is secured to the outside of the outer bag body by a relatively wide strip of pressure-sensitive adhesive tape 61. Approximately half of the width of this tape overlies the tab and laps over onto the outside of the outer bag body 31, as indicated at 63. The other half 65 of the width of this tape is initially free and adapted ultimately to

overlap the slit 57 in the outer bag body, the adhesive on this free portion 65 of the tape being initially protected by a protective strip 67. After the bag has been filled, strip 67 is peeled off to expose the adhesive on free portion 65 of the tape, and then the latter is lapped over the slit 57 in the outer bag body and adhered thereto all around slit 57 for sealing the latter, as indicated in dotted lines in FIG. 12. This is particularly desirable when the bag is packed with highly corrosive material such as caustic soda.

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.

What is claimed is:

1. A bag having a valve formed by an opening in one wall of the bag, and a patch underlying said opening and secured all around its margin to said one wall, said patch having a slit spaced from the opening in said one wall of the bag located toward one end of the patch constituting its inner end and positioned in relation to the opening in said one wall of the bag for entry of a filling spout first through the opening in said one wall of the bag and then through the slit in the patch, the slit extending transversely of the patch, the bag having means associated with the patch for closing the slit in the patch after the bag has been filled through the spout and the spout withdrawn.

2. A bag as set forth in claim 1 wherein the means for closing the slit comprises a flap which extends back over the slit in the patch from the inner end of the patch and has a free edge portion located outward of and adjacent the slit in the patch adapted to spread away from the outer edge of the slit in the patch to permit entry of the spout.

3. A bag as set forth in claim 2 wherein the bag and the patch are formed of different plastic materials, the plastic material from which the patch is formed being less elastic than the plastic material from which the bag is formed, whereby when the bag is filled the patch is tightly stretched.

4. A bag made of flexible heat-sealable sheet plastic material and having a valve formed by a slit in one wall thereof, and a patch of flexible heat-sealable sheet plastic material heat-sealed all around its margin to the inside of said one wall and underlying said slit, said patch having a slit located toward one end thereof constituting its inner end spaced from and generally parallel to the slit in said one wall of the bag, an integral end portion of the patch constituting a flap being folded over on a fold line at the inner end of the patch and extending back over the slit in the patch and underlying the slit in the patch, the side margins of the flap being heat-sealed to the side margins of the patch.

5. A bag as set forth in claim 4 wherein the material of the patch is of less elasticity than the material of the bag.

6. A bag comprising an outer bag body and an inner liner, said bag having a valve formed by an opening in one wall of the outer body, a tab on the adjacent wall of the liner formed by a cut in the liner wall, said tab extending through the opening in the outer body and folded over upon and secured to the outside of said one wall of the outer body, and a patch secured to the inside of said one wall of the liner underlying the opening in the latter formed by the tab-defining cut therein, said patch being adapted to permit entry of a filling spout through the opening in said one wall of the outer body, and through said opening in said one wall of the liner and between the latter and the patch with the inner end of the spout communicating with the interior of the bag for

5

filling the bag and to close the opening after the bag has been filled and the spout withdrawn.

7. A bag as set forth in claim 6 wherein said patch is secured all around its margin to said one wall of the liner and has an opening spaced from the cut therein located toward one end of the patch constituting its inner end and positioned in relation to the cut for entry of the filling spout through the opening in said one wall of the outer body, the opening in said one wall of the liner and then through the opening in the patch.

8. A bag as set forth in claim 7 wherein the patch opening is a slit and there is a flap associated with the patch which extends back over the slit in the patch from the inner end of the patch, the flap having a free edge portion located outward of and adjacent the slit in the patch adapted to spread away from the outer edge of the slit in the patch to permit entry of the spout.

6

9. A bag as set forth in claim 3 wherein the liner and patch are formed of different plastic materials, the plastic material from which the patch is formed being less elastic than the plastic material from which the liner is formed, whereby when the bag is filled the patch is tightly stretched.

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