

Jan. 1, 1946.

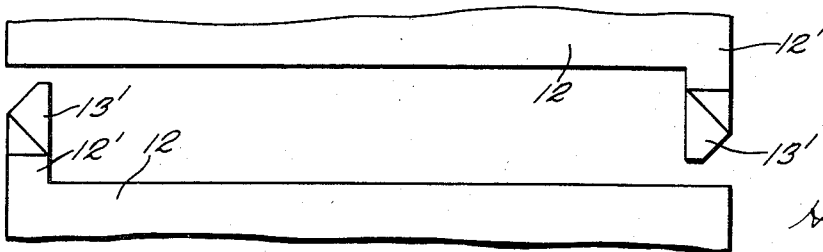
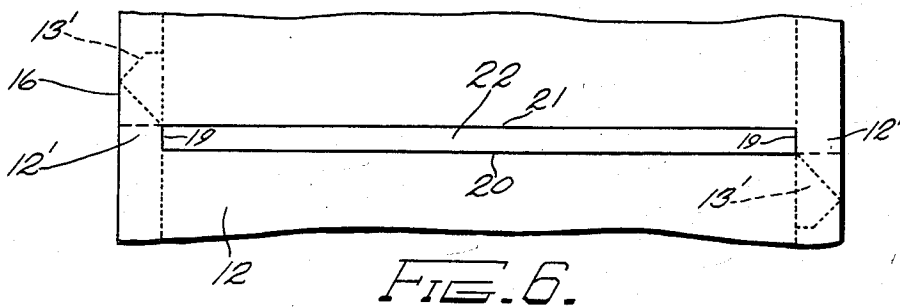
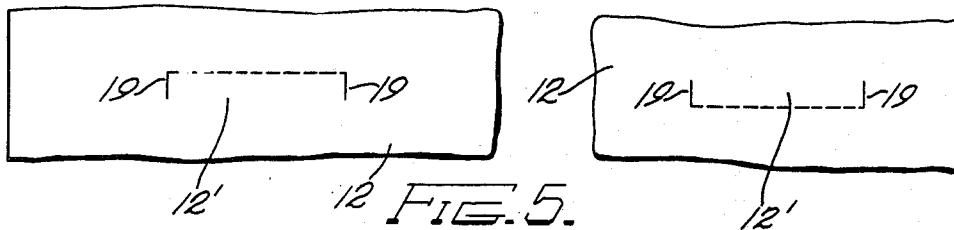
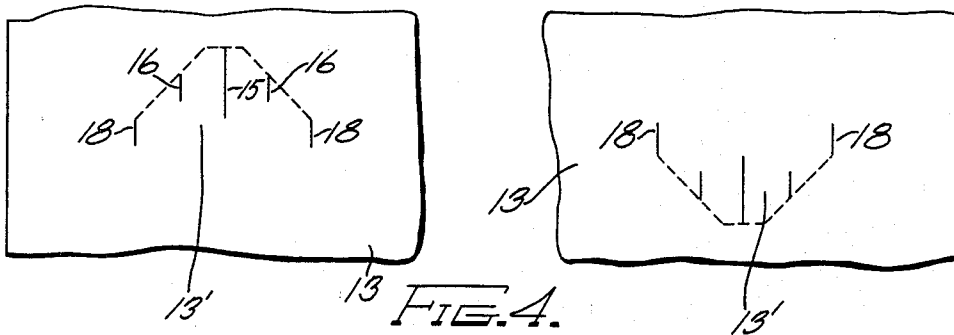
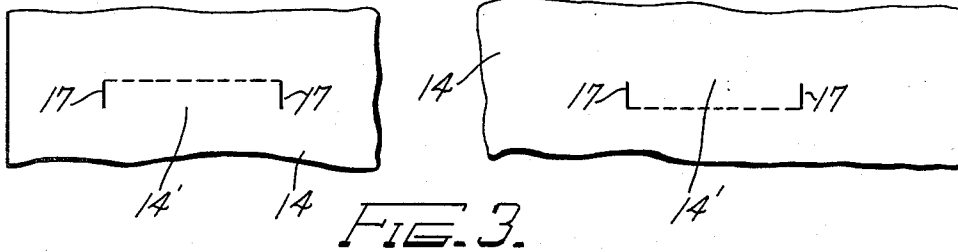
H. E. LEE

2,392,094

METHOD FOR MAKING VALVE BAGS

Filed Nov. 12, 1940

3 Sheets-Sheet 2



Inventor

Harry E. Lee

Owen & Owen
Attorneys

Jan. 1, 1946.

H. E. LEE

2,392,094

METHOD FOR MAKING VALVE BAGS

Filed Nov. 12, 1940

3 Sheets-Sheet 3

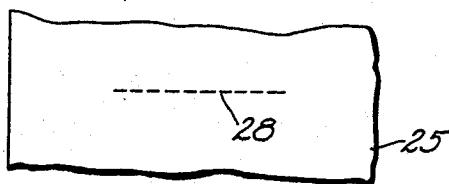


FIG. 8.

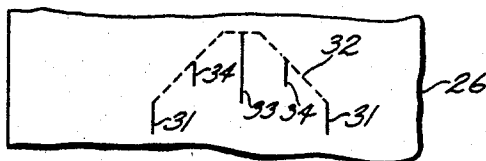


FIG. 9.

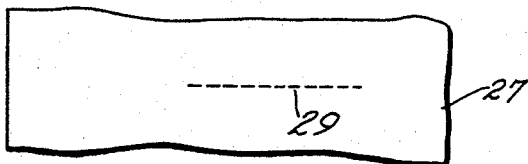


FIG. 10.

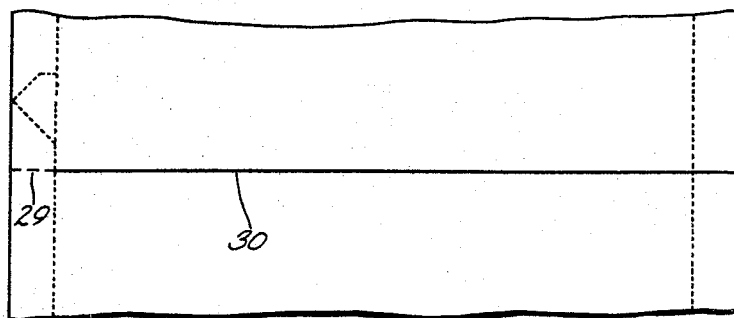


FIG. 11.

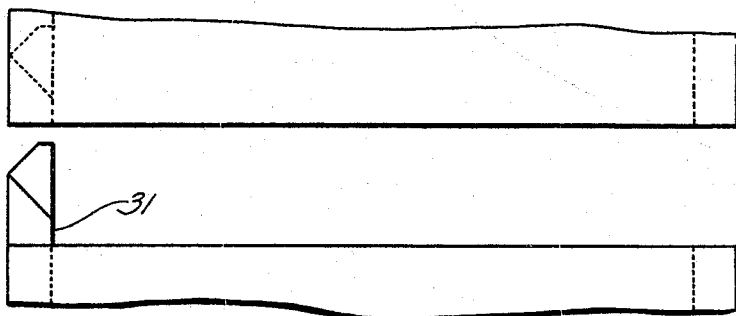


FIG. 12.

Inventor

Harry E. Lee

334

Owen & Owen

Attorneys

UNITED STATES PATENT OFFICE

2,392,094

METHOD OF MAKING VALVE BAGS

Harry E. Lee, Oswego, N. Y., assignor to St. Regis Paper Company, New York, N. Y., a corporation of New York

Application November 12, 1940, Serial No. 365,233

2 Claims. (Cl. 93—35)

This invention relates to a method of making a valve bag.

More specifically the invention relates to a method of producing a multi-ply valve bag having an intermediate ply of the valve extended farther than the other plies.

The advantages and details of the invention will appear as the description proceeds.

In the accompanying drawings forming a part of this application:

Fig. 1 is a view of the valve corner of a bag embodying one form of the present invention, parts being broken away and parts in section for clearer illustration of the construction of the valve;

Fig. 2 is a plan view of the valve in intermediate stage of formation;

Figs. 3, 4 and 5 are diagrammatic views of sheets slitted and perforated for forming inner, intermediate and outer plies of a bag tube, parts being broken away;

Fig. 6 is a view of the sheets shown in Figs. 3, 4 and 5, superposed and formed into a bag tube;

Fig. 7 is a view similar to Fig. 6, but showing the tube separated to form the ends of two bag lengths;

Figs. 8 to 12 correspond to Figs. 3 to 7, respectively, but illustrate a somewhat different arrangement of slots and weakened lines to form a different end for a bag length;

Figs. 3 to 7 illustrate steps in the formation of a bag like that shown in Figs. 1 and 2.

In the embodiment of the invention shown in Fig. 1, a multi-ply bag 10 is closed at one end by a sewed seam 11. In the form shown the bag is made of only three plies, but it will be understood that any greater number of plies may be employed, if desired. For convenience, the outer ply is indicated by reference character 12, the intermediate ply by 13 and the inner ply by 14. The construction is shown as being gusset-folded and having a valve turned in at the corner, the valve being formed of portions 12', 13' and 14', respectively, of the bag wall plies 12, 13 and 14.

In the form shown, the extension 13' is somewhat triangular in shape, as most clearly apparent from Fig. 2, which is a view of the in-turned valve, but with the sides spread apart so that the entire valve lies flat for more ready understanding of the construction. The extension 13' is provided with slots 15 along the center line and 16 along the lines corresponding to the folds, along the external creases of the gusset fold, and

approximately half way between the slot 15 and the closing seam 11.

The valve extension 13' assists in securely closing the valve, and the slots in the extension assist in producing the folds of the closed valve along desired lines. These features are broadly old in a co-pending application of Theron A. Contryman, Serial No. 231,002, filed September 21, 1938, (Patent No. 2,378,285, granted June 12, 1945) but in that case the extension is shown as being formed by an extra sheet of paper slipped in between the plies of the bag. The present invention relates particularly to forming the extension by an integral projection of an intermediate ply of the valve.

The most satisfactory way of making such an extension is to slit or perforate the paper along the lines which subsequently form the edge of the valve prior to superposing the plies of paper of which the bag is formed. After these plies are superposed, they are folded to form a tube in the usual manner, and then the tube is cut along the lines where the end of the bag is to be even, and the slitted lines where the valve edge is to be formed are separated by means of pulling a section from the end of the tube.

It will be understood that sheets 12, 13 and 14 are first perforated or weakened along the lines indicated by dashes in Figs. 3, 4 and 5. For convenience, the slits 17, 18 and 19 in the respective sheets are indicated as being formed before the sheets are superposed, although these slits may be formed after the sheets are superposed and either before or after the superposed sheets are formed into a tube, since these slits in the several plies are aligned in the completed tube.

After the tube is formed, it is cut across along lines 20 and 21 between the ends of slits 19, as indicated in Fig. 6, thus excising a parallelogram from the tube walls. Thereafter the tube is pulled apart along the perforated or weakened lines shown in Figs. 3, 4 and 5 and located across the gussets of the tube. The result is to produce two bag ends each having an extended valve corner comprising an inner ply and an outer ply severed squarely across the extension and an intermediate ply extending further than the inner or outer ply.

It will be understood that the tube can be severed squarely across it at a bag length in each direction from the bag length ends formed as described above, so that two bags with extended valve corners can be formed with the waste of only one cut-out parallelogram.

For some purposes, it is sufficient to have only one or more intermediate sheets extend at the valve corner, without having the inner and outer sheet extend at all beyond the other portions of the bag length. For such purposes, the method illustrated in Figs. 8 to 12 may be employed.

Sheets 25, 26 and 27 may be perforated or weakened along certain lines while the sheets are separated. As shown, inner sheet 25 and outer sheet 27 are weakened along lines 28 and 29 which are superposed when the sheets are superposed and formed into a tube, and are in line with the cross-cut 30 by which the rest of the tube is severed.

Intermediate ply 26 is slit along lines 31, the ends of these slits are connected by weakened line 32, and slots 33 and 34 are formed similar to slots 15 and 16. After the sheets have been superposed and formed into a tube and the tube has been cut along line 30, as indicated in Fig. 11, the sections are pulled apart, leaving the intermediate ply extending as shown in Fig. 12. Obviously, this forms an extended intermediate valve sheet, like 13' in Fig. 1, when the corner is tucked in to form a valve.

In making a valve extension in this way the perforations or slots forming the extension in the inside or outside ply would be likely to result in this extension being torn loose during the movement of the paper through the apparatus for forming the tube. Where the extension is formed on the intermediate ply, this difficulty is avoided, which is a desirable feature in the process of producing the bag.

The bag resulting from such an operation, where the extension is from an intermediate ply, has this ply missing at the corner of the adjoining bag, but no serious defect in the bag results from the absence of the intermediate ply at the corner where there are numerous other plies because of the folding of the bag. Were the extension to be on the outer ply, there would be exposed a loose edge of the outer ply on the adjacent bag which might readily be caught and torn in handling the bag. If the extension were on the inner ply, it would leave a hole where material might pass from the inside of the bag into the space between the plies of the wall, which is obviously undesirable. Where the extension is made from an intermediate ply, neither of these defects results. Accordingly, the production of the extension as an integral part of the intermediate ply is not only an advantage during the

course of manufacture, but is also an advantage in the completed bag.

While two forms of bag end with extended intermediate valve ply have been shown, and the shape of the extension indicated in the drawings is preferred, it will be understood that any desired shape of extension may be made within the scope of the appended claims; and while only three plies have been shown, it will be understood that any greater number may be employed, and where there are more than one intermediate plies any one or more of them may be extended, and where more than one is extended, they may have the same outline or different outlines.

What I claim is:

1. In making a multiply bag, the steps which comprise weakening differently shaped lines in several sheets, the lines having their ends spaced apart substantially the same distance and in a line transverse the sheets, thereafter superposing the sheets with the ends of said lines superposed and forming the sheets into a flattened tube with said lines at one edge of the tube, cutting across the tube from the ends of said lines to the other side, pulling the tube in two along the weakened lines, and folding in the corner of the tube where pulled apart to form a valve, whereby said differently shaped lines result in the plies that form the valve terminating along different lines.
2. In making multiply bags, the steps which comprise weakening lines in at least three sheets, the ends of each line being substantially in alignment transversely of the sheet and being substantially the same distance apart, at least one of said lines being bent between its ends more than at least two other of said lines, superposing the sheets with the ends of said lines substantially superposed, with the sheets with said less bent lines at the top and bottom and the sheet with the more bent line in an intermediate position, folding the sheets longitudinally and forming a flattened tube with said weakened lines at one edge of the tube, cutting the tube transversely from the ends of said lines where not weakened, pulling apart the tube at said weakened lines, and folding in the corner of the tube section from which there projects the flap formed by said more bent line, to form a valve, whereby a valve is formed with an intermediate ply extending into the bag farther than the inner ply and the outer ply.

HARRY E. LEE.