

United States Patent
Lokey

[15] 3,650,460

[45] Mar. 21, 1972

[54] PAPER BAG

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[73] Assignee: Westvaco Corporation, New York, N.Y.

[22] Filed: Aug. 13, 1962

[21] Appl. No.: 216,388

[52] U.S. Cl. 229/55, 229/57, 229/62

[51] Int. Cl. B65d 31/02

[58] Field of Search 229/53, 55, 62, 41

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Primary Examiner—Donald F. Norton

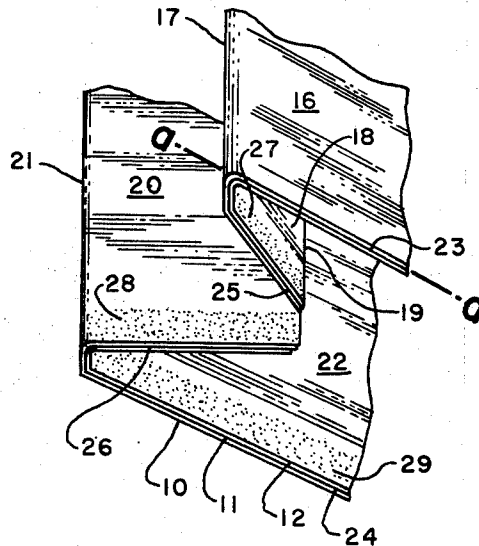
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[57]

ABSTRACT

A gusseted, multi-ply bag having a rear surface and gusset portions adhered to a front surface of the bag to form an end closure and a longitudinal seam formed by the longitudinal edges of each ply being bonded together in overlapped relation.

5 Claims, 4 Drawing Figures



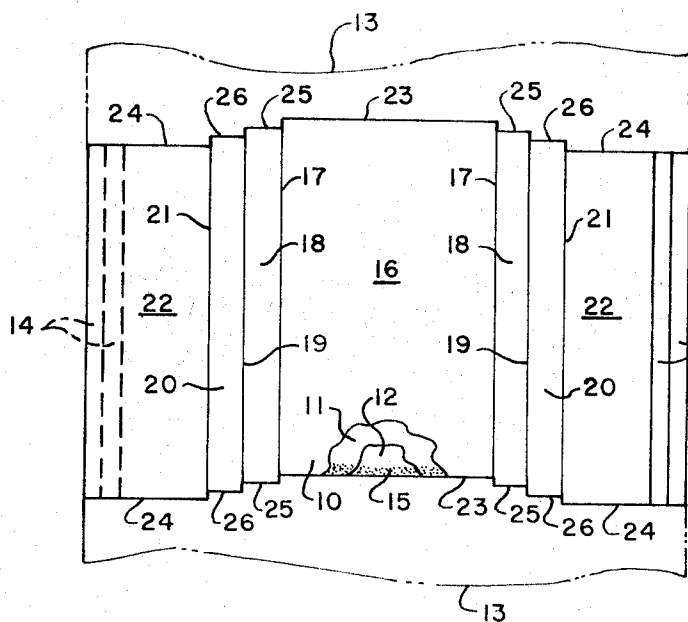


FIG. 1

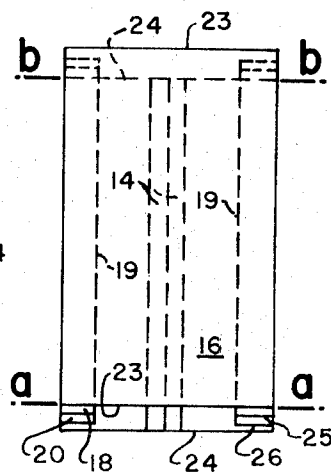


FIG. 2

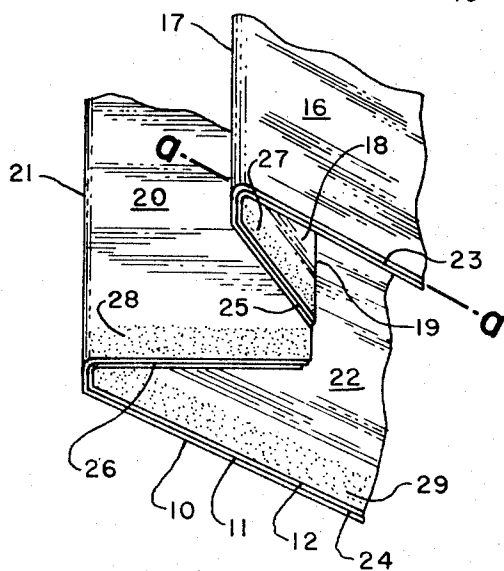


FIG. 3

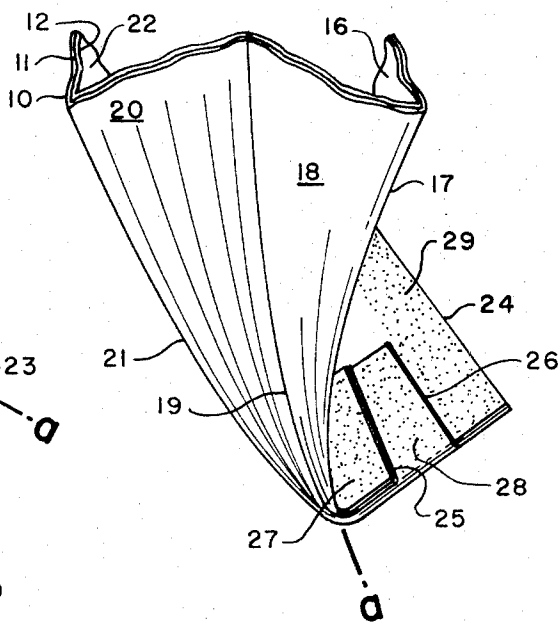


FIG. 4

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This invention relates generally to improvements in bags and more particularly to improvements in the end seals of gusseted bags.

The need for an inexpensive bag having glued end seals of improved strength capable of carrying heavy loads of material, such as cement or fertilizer, has been known to exist in the industry for many years. My bag is particularly suited to fulfill this need.

The strength of the bag results from the novel arrangement of the different walls forming the tubular body of the bag. The walls forming the gussets are arranged to cooperate in the end seals so that the glue is applied to areas that hold the gussets firmly locked in place. These glued areas are unusually large as compared to similar bags which add to the strength of the end seal.

The cost is reduced by the shape of the blank forming the tubular body of the bag which is designed so that consecutive bags can be cut from a plurality of continuous webs of paper without wasting the paper of any web.

The cost of the bag is further reduced by the simple overlapping fold used to seal off the ends of the bag. This fold is made possible through the aforementioned novel arrangement of the different walls forming the tubular body of the bag.

These and many other advantages of this invention will become clear in connection with the detailed description that follows in which:

FIG. 1 is a plan view of the bag blank.

FIG. 2 is a view of the bag folded into a tubular body before the ends are sealed.

FIG. 3 is an enlarged fragmentary perspective view of the typical corner of the tubular body of the bag before the ends of the bag are sealed.

FIG. 4 is another perspective view of a typical corner of the bag after the ends are partially folded.

Referring to the drawings, the bags contain three plies of suitable paper 10, 11, and 12. The plies 10 and 12 form the outer and inner surfaces of the tubular body of the bag, respectively. The number of plies of paper forming the bag may be varied to suit the particular end use of the bag with some of the plies formed from specialty papers to give the bag unique properties, such as water resistance and scuff resistance. All of these changes can be resorted to without specifically altering the novel features of the bag.

Referring to FIG. 1, an arrangement of consecutive bag blanks in continuous webs is represented with portions of adjacent bag blanks indicated by the phantom lines 13. The arrangement specifically points out the lack of waste paper between the bag blanks showing that each cut across the paper web forms an end of adjacent bags. The plies of paper making up the bag blanks, beginning with ply 12 and ending with ply 10 are shifted to the left as viewed in FIG. 1, thus leaving exposed longitudinal marginal portions 14. These exposed longitudinal marginal portions 14 form the longitudinal seam of the bag, by being glued together when the bag is folded into a tubular body as shown in FIG. 2. The plies of paper, 10, 11, and 12 forming the bag are adhesively joined together along the ends as represented by the shaded area 15.

Each ply of the bag blank contains a front wall 16 that is foldably attached along longitudinal edges 17 to the first gusseted walls 18. The first gusseted walls 18 are foldably attached along longitudinal edges 19 to second gusseted walls 20. The second gusseted walls 20 are foldably attached along longitudinal edges 21 to the rear wall 22. The rear wall 22 is formed from two sections, one attached to each of the second gusseted walls 20. The rear wall 22 is adhesively joined along the exposed longitudinal marginal portions 14 when the bag blank is formed into a tubular body, and the two portions of the rear wall 22 become a single wall of the bag.

As shown in FIGS. 1 and 2, the free edges 23 of the front wall 16 are stepped above the free edges 24 of the rear wall 22. The free edges 25 of the first gusseted wall 18 and the free edges 26 of the second gusseted wall 20 terminate in a stepped

pattern intermediate of the free edges 23 of the front wall 16 and the free edges 24 of the rear wall 22. The free edges 25 of the first gusseted wall 18 associated with the front wall 16 through the longitudinal edge 17 extend upwardly beyond the free edge 26 of the second gusseted wall 20 that is associated with the rear wall 22 through the longitudinal edge 21. The walls are substantially equal in longitudinal length and each step is substantially equal in longitudinal length. As a result, the bag blank forms a tubular body having ends that contain rectangular glue receptive areas of substantially equal size for the first gusseted wall 18 and the second gusseted wall 20.

Since each wall is substantially equal in longitudinal length and since each wall has free edges longitudinally displaced from adjacent walls in a stepped pattern, with each step being substantially equal, both ends of the tubular body forming the bag are similar and each corner of the tubular body forming the bag are similar.

The tubular body of the bag in FIG. 2 is formed by folding the bag blank of FIG. 1 along the longitudinal edges 17, 19, and 21, so that the first gusseted wall 18 and the second gusseted wall 20 are overlapped and folded between the front wall 16 and the rear wall 22. The ends of the tubular body are sealed by folding one end of the bag upwardly along line *a-a* and the other end of the bag downwardly along line *b-b*, and then folding these portions back upon the outer surface of the tubular body of the bag formed by the ply 10.

The relation of a typical corner of the tubular body forming the bag is better shown in FIGS. 3 and 4. The first gusseted wall 18 contains a rectangular glue receptive area indicated by the shaded area 27 and the second gusseted wall 20 contains a rectangular glue receptive area indicated by the shaded area 28. Notice that the longitudinal length of the glue area 27 is substantially equal to the longitudinal length of the glue area 28 as follows from the substantially equal stepped pattern of the free edges of the bag blank. In addition, notice that the free edges of each ply are coincident. The longitudinal length of the rectangular glue receptive area 27 and the rectangular glue receptive area 28 is approximately 1/3 the distance separating the free edge 23 of the front wall 16 from the free edge 24 of the rear wall 22, and the rectangular glue receptive area 29 extending beyond the free edge 26 of the second gusseted wall 20 is approximately equal in longitudinal length with the longitudinal length of the rectangular glue receptive areas 27 and 28 of the first gusseted wall and the second gusseted wall 20, respectively.

The bag described herein is uniquely simple, yet has strength properties superior to many forms of multi-wall bags. The blank forming the bag contains cross cuts that are coincident, thus allowing the simultaneous cutting of all plies of paper forming the walls of the bag. The simplicity of the bag construction carries over into the tubular body of the bag which is simply formed from the bag blank. The simplicity of the conversion also aids in the reduction of the overall cost of the bag.

It should be realized that many modifications and variations are possible that are still within the scope of this invention which is covered by the attached claims.

I claim:

1. A gusseted multiwall bag formed from a continuous tube of plies of paper comprising:

a. a tubular body portion

b. a first end structure having

i. a front wall,

ii. a first gusset wall longitudinally connected to said front wall along a first longitudinal edge,

iii. a second gusset wall longitudinally connected to said first gusset wall along a second longitudinal edge, and

iv. a rear wall longitudinally connected to said second gusset wall, along a third longitudinal edge,

v. the front wall being cut perpendicularly to and along the first longitudinal edge to expose an upper portion of the first gusset wall and forming a first step,

vi. the first gusset wall being cut perpendicularly to and along the second longitudinal edge to expose an upper portion of the second gusset wall and forming a second step,
vii. the second gusset wall being cut perpendicularly to and along the third longitudinal edge, to expose an upper portion of the rear wall and forming a third step,
viii. the three steps being approximately equal in longitudinal length, and
ix. the axis of closure of the end being substantially coincident with the upper edge of the front wall, and
c. a second end structure similar to the reverse of the first end structure.
2. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to

overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front portion within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, the longitudinal edges of said plies being successively and progressively stepped with the respective longitudinal edges of each ply being adherently bonded one to the other in overlapped relation, and said end of the tube including all of said overlapped portions and surfaces being folded against said front surface and selectively adhered in position to form said assembled bag end.

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Dedication

3,650,460.—*Burke P. Lokey*, Covington, Va. PAPER BAG. Patent dated Mar. 21, 1972. Dedication filed May 8, 1978, by the assignee, *St. Regis Paper Company*.

Hereby dedicates the balance of the term of said patent to the Citizens of the United States of America.

[*Official Gazette July 11, 1978.*]

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,650,460 Dated March 21, 1972

Inventor(s) Burke P. Lokey

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

After Claim 2, insert:

3. A gusseted multiwall bag formed from a continuous tube of plies of paper comprising:

- (a) a tubular body portion composed of a plurality of plies,
 - (i) the longitudinal edges of said plies being successively and progressively stepped with the respective longitudinal edges of each ply being adherently bonded one to the other in overlapped relation,
- (b) a first end structure having
 - (i) a front wall,
 - (ii) a first gusset wall longitudinally connected to said front wall along a first longitudinal edge,
 - (iii) a second gusset wall longitudinally connected to said first gusset wall along a second longitudinal edge, and
 - (iv) a rear wall longitudinally connected to said second gusset wall along a third longitudinal edge,
 - (v) all of the plies in the front wall being flush cut perpendicularly to and along the first longitudinal edge to expose completely the upper portion of the first gusset wall and form a first step,

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- (vi) all of the plies in the first gusset wall being flush cut perpendicularly to and along the second longitudinal edge to expose completely the upper portion of the second gusset wall and form a second step,
- (vii) all of the plies in the second gusset wall being flush cut perpendicularly to and along the third longitudinal edge to expose completely the upper portion of the rear wall and form a third step, and
- (c) said end structure including all of said exposed upper portions being folded against said front wall and adhesively secured thereto, and
- (d) a second end structure similar to the reverse of the first end structure.

4. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front portion within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, the longitudinal edges of said plies being successively and progressively stepped with the respective longitudinal edges of each ply being

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adherently bonded one to the other in overlapped relation and with the overlapped portion of said longitudinal edges disposed between said gussets, and said end of the tube including all of said overlapped portions and surfaces being folded against said front surface and selectively adhered in position to form said assembled bag end.

5. A gusseted multiwall bag formed from a continuous tube of plies of flexible sheet material, comprising:

(a) a tubular body composed of a plurality of said plies,

(i) the longitudinal edges of said plies being successively and progressively stepped with the respective longitudinal edges of each ply being adherently bonded one to the other in overlapped relation,

(ii) said tubular body being reversely creased along diametrically opposed portions to provide front and rear walls and a pair of gussets interposed therebetween on opposite sides of the axis of said tubular body, respectively,

(b) a first end structure including for each said gusset,

(i) said front wall,

(ii) a first gusset wall longitudinally connected to said front wall along a first longitudinal edge,

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- (iii) a second gusset wall longitudinally connected to said first gusset wall along a second longitudinal edge, and
- (iv) said rear wall longitudinally connected to said second gusset wall along a third longitudinal edge,
- (v) all of the plies in the front wall being cut perpendicularly to and along the first longitudinal edge of each gusset to expose the upper portion of the first gusset wall thereof and form a first step,
- (vi) all of the plies in the first gusset wall of each gusset being cut perpendicularly to and along the second longitudinal edge to expose the upper portion of the second gusset wall thereof and form a second step,
- (vii) all of the plies in the second gusset wall of each gusset being cut perpendicularly to and along the third longitudinal edge to expose the upper portion of the rear wall and form a third step, and
- (c) said adherently bonded and overlapped longitudinal edges of said plies being disposed between said pair of oppositely disposed gussets,
- (d) said end structure including all of said exposed upper portions being folded against said front wall and adhesively secured thereto, and
- (e) a second end structure similar to the reverse of the first end structure.

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CERTIFICATE OF CORRECTION

Patent No. 3,650,460 Dated March 21, 1972

Inventor(s) Burke P. Lokey PAGE - 5

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

- (iii) a second gusset wall longitudinally connected to said first gusset wall along a second longitudinal edge, and
- (iv) said rear wall longitudinally connected to said second gusset wall along a third longitudinal edge,
- (v) all of the plies in the front wall being cut perpendicularly to and along the first longitudinal edge of each gusset to expose the upper portion of the first gusset wall thereof and form a first step,
- (vi) all of the plies in the first gusset wall of each gusset being cut perpendicularly to and along the second longitudinal edge to expose the upper portion of the second gusset wall thereof and form a second step,
- (vii) all of the plies in the second gusset wall of each gusset being cut perpendicularly to and along the third longitudinal edge to expose the upper portion of the rear wall and form a third step, and
- (c) said adherently bonded and overlapped longitudinal edges of said plies being disposed between said pair of oppositely disposed gussets,
- (d) said end structure including all of said exposed upper portions being folded against said front wall and adhesively secured thereto, and
- (e) a second end structure similar to the reverse of the first end structure.

Signed and sealed this 18th day of July 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents