

904,167.

Patented Nov. 17, 1908.

Fig. 1,

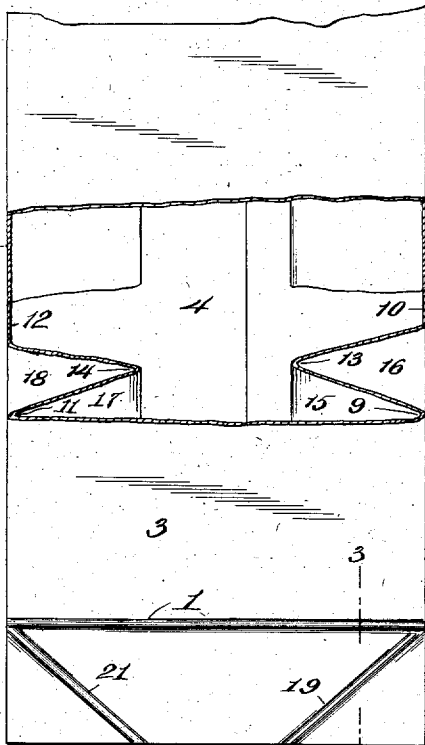


Fig. 2,

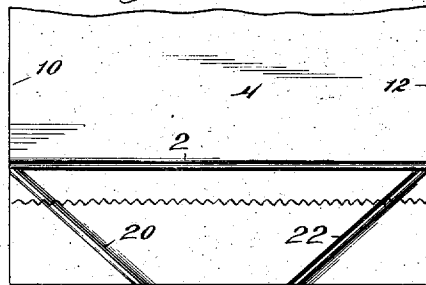


Fig. 3,

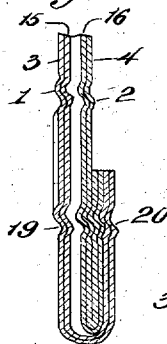


Fig. 4,

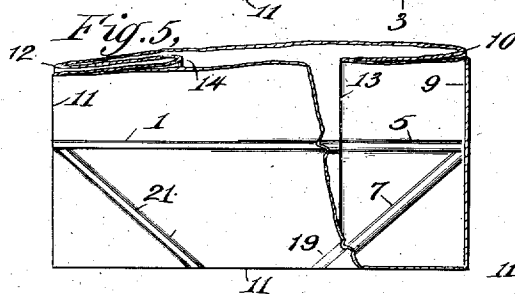
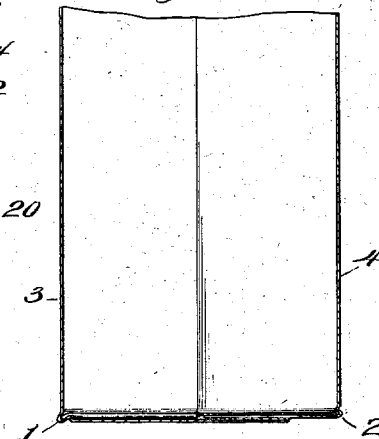
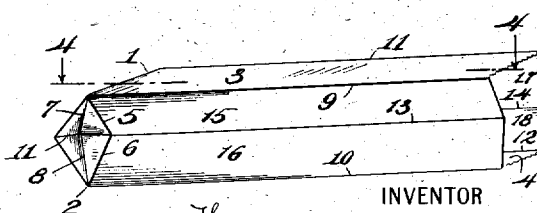


Fig. 6,



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UNITED STATES PATENT OFFICE

HOWARD G. WIDMER, OF BROOKLYN, NEW YORK.

PAPER BAG.

No. 904,167.

Specification of Letters Patent.

Patented Nov. 17, 1908.

Application filed February 14, 1906. Serial No. 300,922.

To all whom it may concern:

Be it known that I, HOWARD G. WIDMER, a citizen of the United States, and a resident of the borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Paper Bags, of which the following is a specification.

This invention relates to improvements in paper bags.

The invention, broadly speaking, seeks, by efficient and inexpensive means, to facilitate the opening out of a bag from its flat or collapsed state and without necessitating the insertion of the hand into the bag.

The invention also seeks to accomplish the result stated with reference to paper bags of the simpler construction, and also by means which may be of a character capable of being formed on or applied to the paper with convenience and at small cost.

Heretofore the paper bags, in most general use, are of the plain tucked variety, consisting of a tube having infolded side tucks and a bottom formed by turning over one end and pasting it down to one of the sides of the bag. This turned over portion forms a folded bottom closure which extends transversely and substantially straight across the entire width of the bag. Of course, the corners of this fold might be clipped off to facilitate pasting and still the closure would have a portion which extended the entire width of the bag. These plain tucked bags are sold, of course, in a flat or collapsed state. These bags are inexpensive, and are sold in large quantities for this reason. They have, however, certain serious defects. They cannot be properly opened out by an in-rush of air, nor by the first entrance of the filling material. They therefore require to be opened out by inserting the hand and pressing out the tucks at the bottom. This, of course, requires time and considerable care to avoid the formation of hap-hazard folds at the bottom corners, which is very objectionable. Furthermore, these bags, when opened out or filled, do not have flat bottoms, the bottoms being more or less rounded. This is another defect. The desirability of overcoming these defects in a bag has been long recognized, and accordingly, bags of various constructions have been proposed with this object in view. These proposed bags, however, could only

be made at a very considerable increase in the cost of manufacture, and are objectionable for this reason. Again, in the case of at least one variety of these proposed bags, the bag does not have a flat bottom and does not open out with the requisite promptness and reliability.

In accordance with the present invention, a bag is provided in which the defects and objections stated are entirely overcome. The bags to which this invention applies are of this plain tucked variety in which the unttered tube or collapsed bag blank has its bottom margin folded over bodily upon itself and secured to a side face of the bag, usually by paste, and the tube is formed of one piece of material, the folded margin or bottom closure therefor extending across the entire width of the bag. In this specification, the expression "having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag," defines the above described plain tucked bag to which this invention applies and the expression is intended to distinguish over the bag known to the trade as the "automatic bag" on which diamond folds are made in the bags and a ready made flat bottom is formed and laid over on one side face of the bag, the bottom closure in this automatic bag being formed by a flap in the middle of this folded over, ready made bottom and not extending across the entire width of the bag. Said expression likewise distinguishes over the bag in which the plies of the tucks are infolded near the bottom of the blank and then the bottom margin folded over upon a side face of the bag to form a closure and lock the infolded plies in place. In this type of bag, also the bottom closure does not extend across the entire width of the bag. In fact, the expression used is intended exclusively to define the cheap, plain type of bag described.

With this invention expensive folding of tuck plies and bag sides is not resorted to but simple means, which may be applied to a collapsed bag with convenience and despatch, is employed to aid the flexure of the bag material along the localities where flexure is required in opening out the bag, and in opening it out so as to form a flat bottom. And these means for aiding flexure may be and preferably are of such a character as to be negligible as regards increas-

ing the cost as compared with those proposed heretofore for the same general purposes.

In the type of bag referred to above as the plain tuck bag, the depth of the tucks determines points on the side edges of the bag, and these points, in turn, naturally determine the approximate corners of the bag bottom when the bag is opened out. It is through these points that the sides of the bag and the tucks tend to flex when the bag is opened out by inserting the hand and by simultaneously pushing up the bottom and smoothing the sides and the tucks. These points, therefore, determine the natural lines of flexure.

In carrying out the invention a corrugation is specially formed in the collapsed bag through all its thicknesses and along its lines of flexure. Thus, each thickness will have its own corrugation consisting of two contiguous creases or an alternate ridge and depression, the ridge of one face of a thickness constituting a depression on the opposite face of such thickness. It will, therefore, be seen that each thickness will have at least one crease whose concavity will face in the proper direction and each crease will, in consequence, aid such thickness to flex in the proper direction notwithstanding the fact that various thicknesses must flex in opposite directions in opening out the bag. Therefore in the preferred form of the invention all the natural lines of flexure are provided with means for aiding flexure. It is to be understood, however, that various methods of manufacture may render other disposition of the means for aiding flexure more desirable.

The preferred form of the invention is illustrated in the drawings forming part of this specification, in which like reference numerals designate corresponding parts or localities and in which:—

Figure 1 illustrates a collapsed bag in side elevation with portions of one side and of the tucks broken away. Fig. 2 is a similar view showing the opposite side from that shown in Fig. 1 and with the top portion of the bag removed. Fig. 3 is an enlarged sectional elevation on the line 3—3 of Fig. 1. Fig. 4 is a sectional elevation of the bag opened out until its bottom is approximately flat, and provided with corrugations. Fig. 5 is a side elevation of a collapsed bag with portions removed to show the creases on the tucks and Fig. 6 is a perspective view of a bag partially opened so that the creases along the lines of flexure of the tucks are visible.

Referring now more particularly to the drawings: Fig. 6 illustrates a bag which has been partially collapsed after having been opened out and naturally creased until there are definitely defined creases along the lines where the sides of the bag and the bottom intersect, that is, along the lines of flexure 1 and

2 of the sides 3 and 4 respectively. In addition to these creases along the lines of flexure 1 and 2 there are two transverse creases 5 and 6 across the tucks which would lie directly beneath the lines 1 and 2 if the bag were again fully collapsed. There are also two oblique or diagonal creases 7 and 8 extending across the tucks, from the intersection of lines 5 and 6 with the side edges 9 and 11 respectively, until they intersect the edge 11 at the bottom of the collapsed bag. For the bag to open out until its bottom is flat it is necessary that something form this bottom. In fact, the bottom is formed by the portions of the sides 3 and 4 below the lines 1 and 2, which are folded together when the bag is collapsed and which must each be of an extent equal to the width of a tuck fold or the depth of the tucks. Thus it is that the depth of the tucks determines the lines 1 and 2 and consequently the points where they intersect the side edges 9, 10, 11 and 12, which subsequently are the corners of the bag bottom. It is obvious that these additional creases do not exist in and are not essential to the bag when collapsed. However, the bag, when collapsed, possesses several creases which are essential and are made during the process of manufacture. Thus each infolded side tuck possesses three creases. Two of these are where the tucks join the sides of the bag designated by the reference numerals 9 and 10, 11 and 12 and one where the tuck is folded on itself designated by 13 and 14. The sides of the bag themselves also possess one crease along the bottom edge 11. To distinguish the lines of flexure 1, 2, on the sides 3 and 4; the lines of flexure 5, 6, 7, and 8 on the folds 15 and 16; and the similar lines of flexure 5, 6, 7 and 8 on the tuck folds 17 and 18, but not shown in Fig. 6; from the lines of flexure essential in the collapsed bag, they are termed lines of flexure which the bag has when it is opened out until its bottom is approximately flat, in addition to the lines of flexure along the folds or creases essential in the collapsed bag.

As the bag is opened out until its bottom is approximately flat the paper walls of the bag must bend in certain definite directions, that is, they form creases which have their several concavities on a definite face or faces of the wall or walls. For instance, the concavities of the creases along lines of flexure 1 and 2 are on the inner face of the sides 3 and 4 respectively, and if the bag were collapsed would come face to face. The concavities of the creases along the lines of flexure 5 and 6 are likewise on the inside faces of the tuck folds, 15 and 16 respectively, but as the tuck is infolded when the bag is collapsed the convexities of these folds would come face to face instead of the concavities. The creases along the lines of flexure 7 and 8 have their concavities on the outside faces of the tuck

folds 15 and 16 unlike those along the lines 5 and 6 and would have their concavities face to face when the bag is again collapsed.

In order that the bag may be opened out with convenience and despatch it is proposed to form creases along the lines of flexure before the bag is ever opened out and in a manner so that they will exist as nearly as possible like the creases which would necessarily be formed in the bag by opening it out and forming the bottom by hand. Owing to the varied positioning of these natural creases formed by opening out the bag, it is difficult to form artificially at one operation, a single crease along each line of flexure so that each crease will have its concavity lying on the proper face of the bag wall. In order to overcome this objection the collapsed bag is passed through dies which form a plurality of contiguous creases or, in the preferred form, a complete corrugation, comprising a ridge and a depression, approximately along the lines of flexure 1 and 2 of the sides, and obliquely across the corners of the bag as shown at 19, 20 and 21, 22 along lines overlying the lines of flexure 7 and 8. This creasing or fluting involves the several thicknesses of the material of the collapsed bag and of the infolded tucks and as a result, produces at least one crease approximately along each line of flexure which has its concavity lying on the proper face of the bag wall at that locality. The bag, when forced through the air until the sudden inrush of air forces out the tucks, then readily selects the proper crease on which to flex and opens out automatically, without additional aid, until its bottom is approximately flat and the tucks have been transformed into approximately flat walls. This automatic selection of the proper crease is best illustrated in Fig. 4, while Figs. 3 and 5 illustrate how the creases or convolutions involve the entire thicknesses of the collapsed bag.

It is to be understood that the expression "along a line of flexure" does not mean that the plurality of contiguous creases or corrugations must continue throughout the entire extent of the line of flexure. In some cases

they may be intermittent if desired. Furthermore any material suitable may be employed instead of paper, although paper is preferred.

While the preferred form and adaptation of this invention has been described and illustrated, various combinations and modifications of details are considered to be within the scope of this invention as particularly set forth in the following claims:—

1. In paper bags, a bag comprising a tube formed of one piece of material and having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag; said bag being provided, along one or more lines of flexure, with a corrugation which is especially formed through all the thicknesses of the collapsed bag.

2. In paper bags, a bag comprising a tube formed of one piece of material and having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag; said bag being provided with a corrugation specially formed approximately at angles of 45° to the side edges of the bag across the bottom corners of the bag and extending through all the thicknesses of the collapsed bag.

3. In paper bags, a bag comprising a tube formed of one piece of material and having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag; said bag being provided with a corrugation specially formed approximately at angles of 45° to the side edges of the bag across the bottom corners of the bag and with a corrugation formed straight across the collapsed bag parallel to the bottom closure, both of said corrugations extending through all the thicknesses of the collapsed bag.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HOWARD G. WIDMER.

Witnesses:

IDA G. GILMORE,
LEONARD DAY.

DISCLAIMER.

904,167.—Howard G. Widmer, Brooklyn, N. Y. PAPER BAG. Patent dated November 17, 1908. Disclaimer filed January 21, 1910, by the assignee, *Continental Paper Bag Company*.

Enters this disclaimer of claim 1 and also of claim 2 of said Letters Patent, which claims are in the following words, to wit:

"1. In paper bags, a bag comprising a tube formed of one piece of material and having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag; said bag being provided, along one or more lines of flexure, with a corrugation which is especially formed through all the thicknesses of the collapsed bag.

"2. In paper bags, a bag comprising a tube formed of one piece of material and having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag; said bag being provided with a corrugation specially formed approximately at angles of 45° to the side edges of the bag across the bottom corners of the bag and extending through all the thicknesses of the collapsed bag."—[*Official Gazette, February 1, 1910.*]

folds 15 and 16 unlike those along the lines 5 and 6 and would have their concavities face to face when the bag is again collapsed.

In order that the bag may be opened out with convenience and despatch it is proposed to form creases along the lines of flexure before the bag is ever opened out and in a manner so that they will exist as nearly as possible like the creases which would necessarily be formed in the bag by opening it out and forming the bottom by hand. Owing to the varied positioning of these natural creases formed by opening out the bag, it is difficult to form artificially at one operation, a single crease along each line of flexure so that each crease will have its concavity lying on the proper face of the bag wall. In order to overcome this objection the collapsed bag is passed through dies which form a plurality of contiguous creases or, in the preferred form, a complete corrugation, comprising a ridge and a depression, approximately along the lines of flexure 1 and 2 of the sides, and obliquely across the corners of the bag as shown at 19, 20 and 21, 22 along lines overlying the lines of flexure 7 and 8. This creasing or fluting involves the several thicknesses of the material of the collapsed bag and of the infolded tucks and as a result, produces at least one crease approximately along each line of flexure which has its concavity lying on the proper face of the bag wall at that locality. The bag, when forced through the air until the sudden inrush of air forces out the tucks, then readily selects the proper crease on which to flex and opens out automatically, without additional aid, until its bottom is approximately flat and the tucks have been transformed into approximately flat walls. This automatic selection of the proper crease is best illustrated in Fig. 4, while Figs. 3 and 5 illustrate how the creases or convolutions involve the entire thicknesses of the collapsed bag.

It is to be understood that the expression "along a line of flexure" does not mean that the plurality of contiguous creases or corrugations must continue throughout the entire extent of the line of flexure. In some cases

they may be intermittent if desired. Furthermore any material suitable may be employed instead of paper, although paper is preferred.

While the preferred form and adaptation of this invention has been described and illustrated, various combinations and modifications of details are considered to be within the scope of this invention as particularly set forth in the following claims:—

1. In paper bags, a bag comprising a tube formed of one piece of material and having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag; said bag being provided, along one or more lines of flexure, with a corrugation which is especially formed through all the thicknesses of the collapsed bag.

2. In paper bags, a bag comprising a tube formed of one piece of material and having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag; said bag being provided with a corrugation specially formed approximately at angles of 45° to the side edges of the bag across the bottom corners of the bag and extending through all the thicknesses of the collapsed bag.

3. In paper bags, a bag comprising a tube formed of one piece of material and having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag; said bag being provided with a corrugation specially formed approximately at angles of 45° to the side edges of the bag across the bottom corners of the bag and with a corrugation formed straight across the collapsed bag parallel to the bottom closure, both of said corrugations extending through all the thicknesses of the collapsed bag.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HOWARD G. WIDMER.

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"2. In paper bags, a bag comprising a tube formed of one piece of material and having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag; said bag being provided with a corrugation specially formed approximately at angles of 45° to the side edges of the bag across the bottom corners of the bag and extending through all the thicknesses of the collapsed bag."—[*Official Gazette*, February 1, 1910.]

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"2. In paper bags, a bag comprising a tube formed of one piece of material and having infolded side tucks and a folded bottom closure extending substantially straight across the entire width of the bag; said bag being provided with a corrugation specially formed approximately at angles of 45° to the side edges of the bag across the bottom corners of the bag and extending through all the thicknesses of the collapsed bag."—[*Official Gazette*, February 1, 1910.]