

904,169.

Patented Nov. 17, 1908.

Fig. 1,

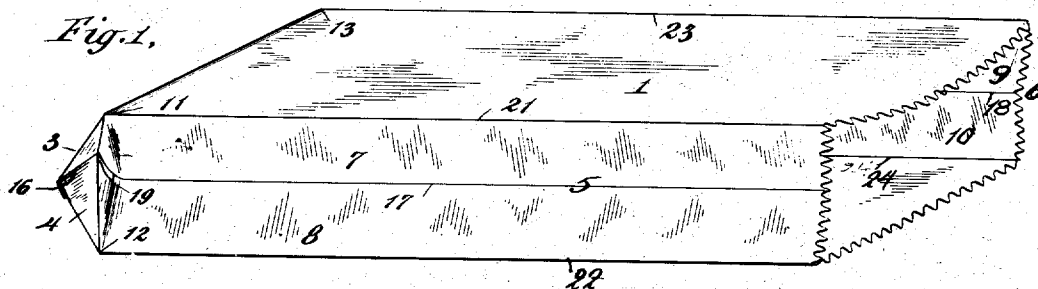


Fig. 2,

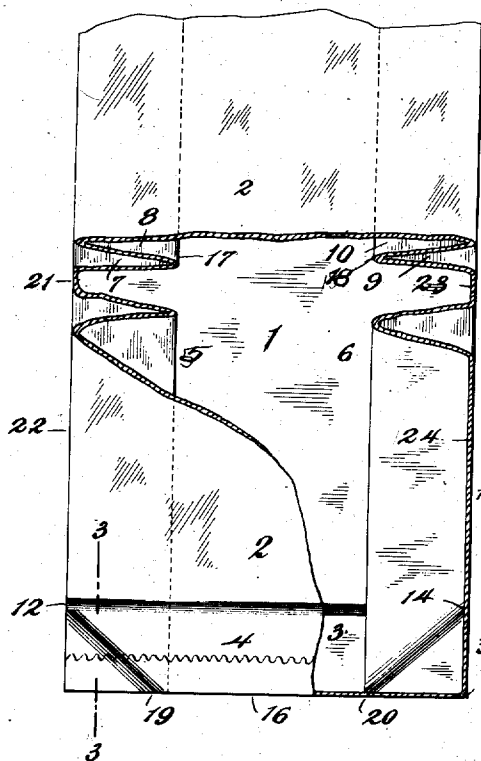


Fig. 3,



Fig. 4,

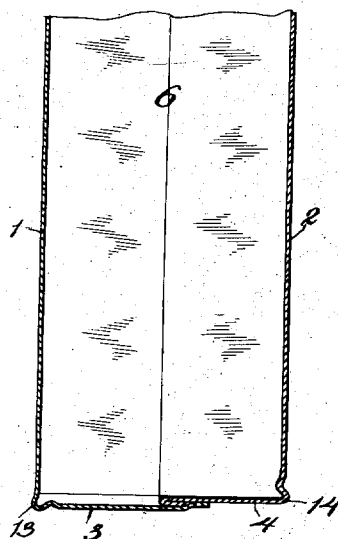
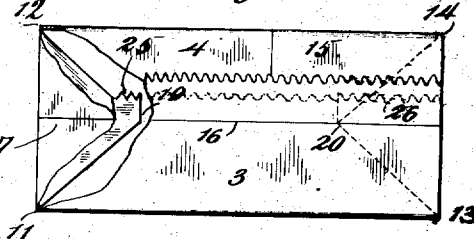


Fig. 5,



WITNESSES:

Leonard Day
 Ida Gibson

INVENTOR

Howard G. Widmer

BY

Nicholas M. Goodlett, Jr.
 His ATTORNEY

UNITED STATES PATENT OFFICE.

HOWARD G. WIDMER, OF BROOKLYN, NEW YORK.

SELF-OPENING PAPER BAG.

No. 904,169.

Specification of Letters Patent.

Patented Nov. 17, 1908.

Application filed February 14, 1906. Serial No. 300,994.

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 Self-Opening Paper Bags, of which the following is a specification.

This invention relates to improvements in paper bags.

The invention, broadly speaking, seeks 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.

At this time 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, tucks and all, and pasting it down onto 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 properly be opened out by an inrush 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 hazardous folds at the bottom corners, which are 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 unaltered 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 bag to which this invention applies and the expression is intended to distinguish over the bag known to the trade as the "automatic bag" in 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, are employed to aid the flexure of the bag material along the localities where flexure is required in opening out the bag, and in opening out so as to form a flat bottom. Also these means for aiding flexure may be, and preferably are, of such a character as to be negligible as regards increasing the cost over the old plain tucked bags. Thus, the bags embodying the invention effect a great saving in cost as compared with those proposed heretofore for the same general purposes.

In the type of the bag referred to above as the plain tucked 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 out the sides and the tucks. These points, therefore, determine 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 on 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 said 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.

It is to be understood that any or all of the various means for aiding flexure may be applied to any or all of the lines of flexure as described. The preferable form of the invention is illustrated in the following drawings forming part of this specification, in which like numerals designate corresponding parts or localities and in which:—

Figure 1 is a perspective view showing a tucked bag opened out and smoothed by hand to form the creases along the transverse lines of flexure of the sides and the oblique lines of flexure of the tucks. Fig. 2 is a side elevation of a collapsed bag embodying the invention but with parts broken away to show the tucks. Fig. 3 is an enlarged section along line 3—3 of Fig. 2. Fig. 4 is a section in elevation of a bag opened out until its bottom is flat and embodying the invention. Fig. 5 is a bottom view of a bag such as is illustrated in Fig. 1 but opened out and with parts broken away to show the tucks.

Referring now more particularly to the drawings:—1 and 2 designate the sides of the bag respectively, which have portions 3 and 4 respectively which are folded together when the bag is collapsed and which form the bottom of the bag when it is opened out. The extent of each of these portions is determined by the depths of the tucks 5 and 6 or in other words by the width of the tuck folds 7, 8, 9 and 10. When opened out the bag has a thickness equal to the combined width of the two folds of each tuck, therefore a portion of the sides sufficient to bridge this thickness must bend in to form the bot-

tom. In this manner the bottom corners of the bag when opened out are determined and are designated by the numerals 11, 12, 13 and 14. Since, when the bag is made, its bottom margin 15 is turned over and pasted down onto the side of the bag, the tuck folds even to the inner creases 17 and 18, are fixed to the sides of the bag along the bottom edge 16. Thus, in order that the tucks may open out and the side portions 3 and 4 flex in to form a bottom for the bag, the bottom ends of the tucks must fold over on the bias along oblique lines extending from the bottom ends, 19 and 20 of the creases 17 and 18, respectively, to the corners 11, 12, 13 and 14 on the edges 21, 22, 23 and 24, respectively. These lines are termed the oblique lines of flexure of the tucks and are best illustrated in Figs. 1 and 5.

In a preferred embodiment of this invention a plurality of contiguous creases or one or more corrugations are artificially formed in the bag material, either before or after the bag is formed, approximately along the transverse lines of flexure of the sides namely along the lines 11—13 and 12—14 and best shown in Figs. 2, 3 and 4. In addition to these creases on the sides of the bag there may be formed with advantage a plurality of contiguous creases or one or more corrugations approximately along the oblique lines of flexure of the tucks, namely along the lines 19—11, 19—12, 20—13 and 20—14. Each crease or corrugation may be intermittent or continuous. It has been found to be convenient to apply these oblique creases after the bag is formed although they may be formed on the bag material before the bag is formed. A preferred manner of applying them is to pass the corners of the collapsed bag beneath suitable dies which crease or corrugate the entire thickness of the collapsed bag. An advantage gained by forming a corrugation is that each tuck fold will be provided with one crease at least which has its concavity on the face of the fold where it will aid flexing in the greater degree. The corner creases formed on the sides 1 and 2 of the bag during this process are merely incidental and neither aid nor hinder the flexing of the bag in opening out.

The formation of a bag easily provided with this invention is illustrated in the drawings. In Fig. 5, 15 shows the bottom margin pasted down on the portion 4 to form the bottom closure while 25 and 26 show how the bottom margins of the tucks are folded over to complete the closure. However, in carrying out my invention, I do not limit myself to the precise type of bag illustrated as various types are suitable. But

What I claim and desire to secure by Letters Patent is:—

1. A paper bag comprising a tube formed

of one piece of material and having, when collapsed, infolded side tucks and, when opened out, a substantially flat bottom, said bag being provided with one or more corrugations, localized approximately along the transverse lines of flexure of the sides which the bag has when it is opened out until its bottom is approximately flat.

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, along the transverse lines of flexure of the sides, and along the oblique lines of flexure of the tucks, with a corrugation specially made to aid the proper opening out of the 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.

904,169.—Howard G. Widmer, Brooklyn, N. Y. SELF-OPENING 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 of said Letters Patent, which claim is in the following words, to wit:

"1. A paper bag comprising a tube formed of one piece of material and having, when collapsed, infolded side tucks and, when opened out, a substantially flat bottom, said bag being provided with one or more corrugations, localized approximately along the transverse lines of flexure of the sides which the bag has when it is opened out until its bottom is approximately flat."—[*Official Gazette, February 1, 1910.*]

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