June 12, 1962 A. G. CLOUDSLEY 3,038,651

LINED BAG

Filed Feb. 23, 1961 2 Sheets-Sheet 1

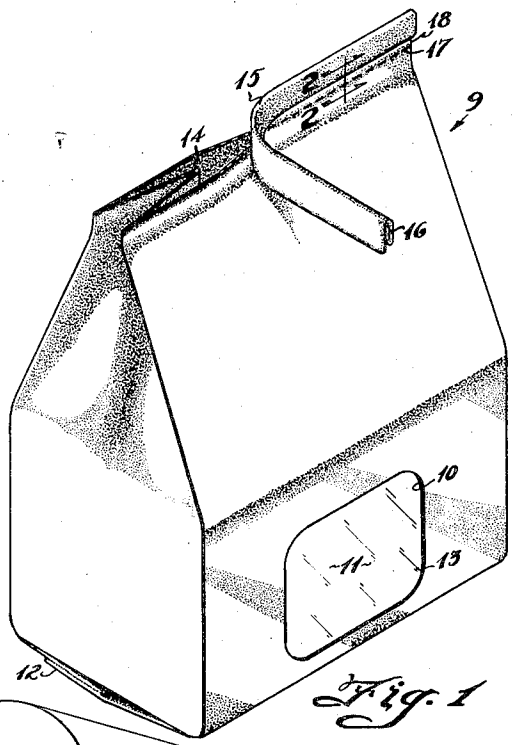


Fig. 1

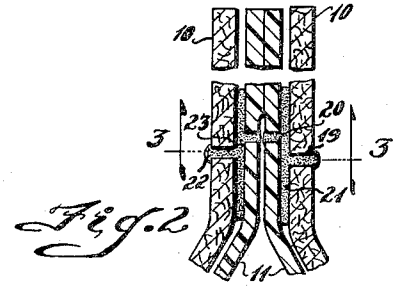


Fig. 2

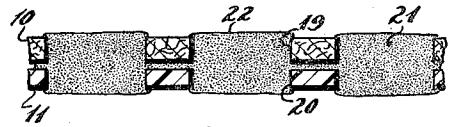


Fig. 3

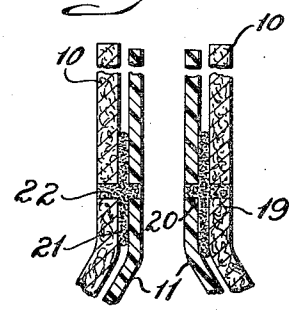


Fig. 4

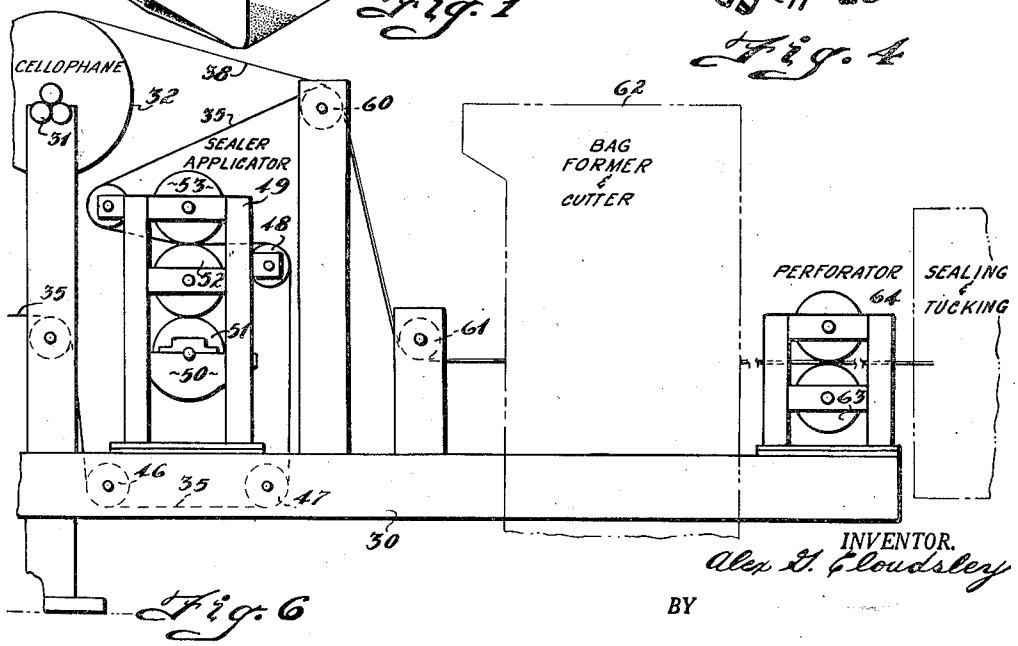


Fig. 6

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LINED BAG

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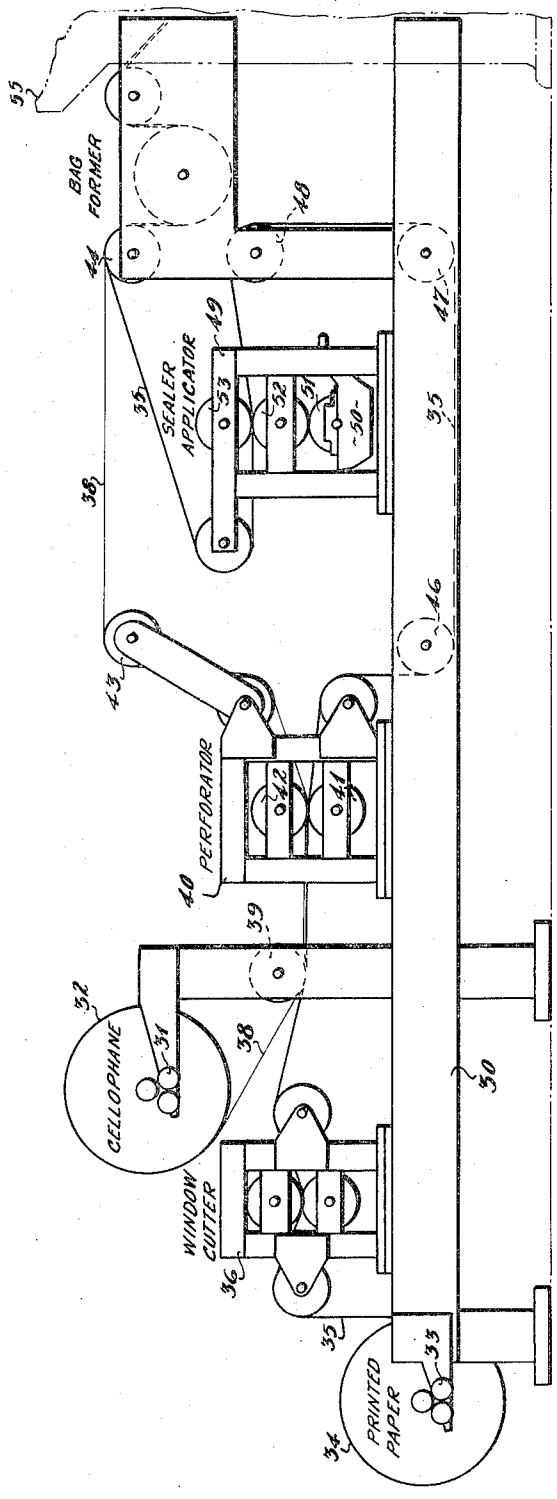


Fig. 5

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3,038,651
LINED BAG

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4 Claims. (Cl. 229—55)

This invention relates to a bag and the method of making it and more particularly the invention relates to a bag for comestibles, the bag having a plastic inner liner, the bag and liner having a sealed perforated strip for opening the bag.

For convenience of explanation and terminology, the invention will be described with particular reference to cookie bags comprising a paper outer ply and a cellophane inner liner. It should be well understood that the invention is applicable to all types lined bags including cellophane to cellophane, cellophane to glassine, polypropylene to glassine and the like.

In the packaging of comestibles such as cookies and the like, a number of important considerations are involved. Above all, the objective of any package is to stimulate the sale and resale of the goods contained therein. The package therefore must be attractive and in many instances, should show the goods contained within the package. Insofar as possible the package should prevent the goods from becoming stale.

Baked goods such as cookies present a particularly difficult problem in packaging. The cookies tend to crumble and are inherently greasy. To contain the cookies properly, the package must be sealed tight enough to prevent the passage of crumbs and should prevent wicking, that is, that capillary flow of grease through the fibrous paper material.

To meet the required conditions of packaging such articles, it has been proposed to provide a paper bag having a cellophane liner. Preferably, the bag has a window covered by the cellophane liner, the window permitting the goods within the package to be readily viewed.

The problem attending the use of a cellophane lined bag, and the one which the present invention seeks to overcome, resides in the fact that cellophane is notoriously difficult to tear. It is not only difficult to get a tear started in cellophane, but once a tear is started it is extremely difficult to control the direction of the tear. Consequently, when a cellophane lined paper bag is torn, the usefulness of the package to store the remaining goods may well be destroyed.

It has been an objective of the invention to provide a cellophane lined paper bag having a line of perforations extending completely around the upper portion of the bag to facilitate the tearing of a small strip away from the top of the bag in order to open the bag. The removal of the tear strip should leave the bag substantially intact so that the upper portion of the bag can be folded down to reclose it over the goods remaining in the bag.

The line of perforations is spaced down from the top of the bag a distance sufficient to leave the normal length of the bag which is folded and sealed when the bag is originally filled. Thus the line of perforations is distinct from the bag seal so that when a tear is made along the line of perforations, the folded and sealed portion of the bag is completely removed.

The invention also provides for the application of a sealer between the paper ply and liner, the sealer flowing into the holes created by the perforating operation so as to seal the perforations. The sealer renders the bag dust proof, moisture proof, sift proof and prevents wicking of the grease from the comestibles through the cellophane and fibrous material. Additionally, the sealer prevents accidental tearing of the perforations during handling of the package before the package is ready to be opened.

Another objective of the invention has been to provide methods for the formation of a line of perforations having a sealer filling the holes formed during the perforating operation. In one method, a strip of sealer is applied between the liner and the paper and thereafter the liner and the paper are perforated. The still fluid sealer will flow into the holes created by the perforating operation.

In another form of the invention, the cellophane and paper webs from which the bag is formed are brought together, perforated and thereafter separated to permit the application of sealer to one of the webs along the line of perforations. Thereafter the webs are brought together with the perforation lines substantially in register, the sealer flowing into the perforation holes of the opposite web.

In the method described above, it has been another objective of the invention to have the lines of perforations slightly out of register, for example, by about 1/16 of an inch so as to insure a more perfect closing of the perforations by the sealer.

The several features of the invention will be more readily understood from the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view of a bag formed in accordance with the present invention;

FIG. 2 is a cross sectional view taken along lines 2—2 of FIG. 1, but with the top portion of the bag shown unfolded.

FIG. 3 is a cross sectional view taken along lines 3—3 of FIG. 2:

FIG. 4 is a cross sectional view similar to the view of FIG. 2 showing an alternative embodiment, with the top portion of the bag being shown unclosed and unsealed;

FIG. 5 is a diagrammatical side elevational view of apparatus by which the invention may be performed; and

FIG. 6 is a diagrammatic side elevational view of alternative apparatus.

A paper bag indicated at 9 in FIG. 1 may be considered to be a tube formed by an outer printed paper ply 10 and an inner cellophane ply 11, the tube being closed at one end to form a bottom portion 12 which is sealed and folded before the bag is filled. The bag in the illustrated form of the invention has a window 13 in the outer paper ply through which the cellophane liner 11 is visible. It should be understood that the invention is not necessarily limited to a bag having a window. The upper portion of the bag has gussets 14 folded in each side thereof to provide a flat top portion 15 which is sealed and folded over as at 16 when the bag has been filled.

In practice, a manufacturer of comestibles will purchase bags from a manufacturer of bags. In the form in which they are purchased, the bags are closed at the bottom as shown at 12 and are formed with the gussets 14 and the upper portion thereof but are not folded over at the top and sealed. The bags are flat when received by the packager, and, on the filling line, the bag is spread open ready for introduction into the filling machine.

In the manufacture of the bag, a line of perforations 17 which extends completely around the upper portion of the bag is formed through both plys, leaving a strip 18 above the line of perforations of sufficient length to be sealed and folded over as at 16 to close the bag. In the preferred form of the invention, the line of perforations may be spaced down from the top edge of the bag by a distance of approximately 1½ inches.

As illustrated in FIGS. 2 and 3 the perforations may

be elongated slits 19 in the paper and slits 20 in the liner. A strip of sealer 21 extends completely around the top portion of the bag and is coincident with the line of perforations. The sealer may be glue, a hot melt wax or a thermo plastic resin. It is important that the sealer have the characteristics of being able to flow into the perforations in order to close them as shown at 22.

In the form of the invention shown in FIG. 2, the perforations 19 in the paper are slightly offset from the perforations in the cellophane liner. The offsetting of the perforations improves the seal by the amount of sealer in the small section 23 between the offset perforations. The out-of-register perforations of FIG. 2 are formed by the apparatus shown in FIG. 5 which will be described below.

Alternatively, the perforations may be directly in line as illustrated in FIG. 4. The apparatus by which such in-register perforations are formed may be that of FIG. 5 or alternatively may be that illustrated in FIG. 6 to be described below.

Referring to FIG. 5, a base 30 for the apparatus supports bearing rollers 31 for a cellophane roll 32 and bearing rollers 33 for a paper roll 34. Preferably, the printed paper has all of the printed material formed on it before it is brought to the perforating and bag forming equipment. A web 35 from the paper roll first passes through a die cutter 36 by which the window in the paper is formed.

The cellophane roll has a web 38 which is brought together with the paper web 35 over an idler roll 39. Together the webs are brought into a perforator 40 having an anvil roll 41 and a perforator roll 42. In the perforator 40 the line of perforations completely across the webs is formed. Each bag is provided with a single line of perforations through both the paper web and the cellophane liner. The webs are thereafter separated with the cellophane web passing over a tension idler roll 43 onto an idler roller 44. The paper web 35 passes over idler rollers 46, 47 and 48 which bring the web into a sealer applicator 49.

The sealer applicator is of the usual type having an adhesive pan 50 for the liquid sealer and an adhesive roll 51 which rotates in the sealer. The doctor roll 51 applies sealer in the desired spots to a sealer roll 52 which is held against the web 35 by a pressure roll 53. The sealer roll 52 is prepared so as to apply sealer not only to the transverse strip across the perforation line but also to the several other positions on the paper by which the liner is secured to the bag. For example, a line of sealer may be applied around the window 13 and to those portions of the web which will form the top and bottom edge portions of each bag.

After the application of the glue to the paper web, the webs are brought together over the roller 44 and thereafter are brought into known bag forming machinery indicated at 55.

In the operation of the apparatus in FIG. 5, it can be seen that the webs are first brought together and perforated and thereafter sealer is applied to one of the plys. In the illustrated embodiment the sealer is applied to the paper ply although the sealer could, of course, be applied to the cellophane as well. Thereafter the plys are brought together with their perforation lines substantially in register so that the line of sealer will be co-extensive with the perforation lines of both the paper ply and the cellophane liner. If the perforation lines are exactly in register, they will appear in the bag, as illustrated in FIG. 4. However, it may be desirable to maintain the line of perforation slightly out-of-register so that they will appear as shown in the cross sectional view of FIG. 2.

In applying the invention to certain lightweight, low strength papers, the strain on the perforated webs as they pass through the sealer and bag forming machinery may be so great as to tend to cause the webs to tear along the perforation lines. In such event, the apparatus of FIG. 6 may be preferred.

In FIG. 6, the paper web 35 is die cut as before and passes through the sealer applicator 49 before any perforations are made. The sealer is applied in a manner identical to that described in connection with FIG. 5 although the transverse strip sealer will not be co-extensive with the perforations until the perforations are formed thereafter.

The paper web 35 is brought together with the cellophane liner web 38 over idler rollers 60 and 61. Thereafter, the webs are conveyed into the bag forming and cutting machinery indicated at 62. In the bag forming machinery the gussets are formed and the webs are cut to bag length. After the bags are cut, they pass between an anvil roller 63 and a perforator roller 64 wherein the perforations are formed. The perforations pass through what is actually eight plys where the gussets are formed and four plys in that portion of the bag between the gussets.

It should be understood that the traverse of the webs from one end of the machinery to the other is quite rapid. The time interval between the application of the sealer and the formation of the perforations is therefore de minimus insofar as the drying of the sealer is concerned. At the time the perforations are made, the sealer will still be in liquid flowable condition and will in fact be forced into the perforations by the perforator itself thereby forming the seal of the perforation holes. After perforating the bags are tucked, glued and folded in the apparatus indicated at 65.

After the bags have been formed as described above, they are transported to the packager of the goods in flat condition. The packager opens the bags, fills them and seals the top edge portion above the line of perforations in any known manner. For example, the top edge portion may be subjected to a heat sealer which causes the cellophane to bond together thus forming an air tight seal. Thereafter, the fold indicated at 16 is formed and is subjected to the heat sealer. This causes the fibers in the paper to deform and take a set leaving the bag as shown.

The customer who purchases the goods can open the bag simply by grasping the folded over top edge of the bag and tearing it away along the line of perforations as illustrated. When a portion of the goods has been removed, the remaining top edge of the bag can be folded over tightly to reduce the possibility of the goods becoming stale before they are next used. The removal of the top folded sealed strip only slightly diminishes the original over-all length of the bag.

Prior to the time that the bag is used, the sealer which fills the perforation holes maintains the goods in fresh condition and maintains the attractive appearance of the bag by preventing the flow of crumbs and grease through the perforations.

I claim:

1. A paper bag comprising, a tubular paper outer ply having a window therein, a tubular cellophane inner liner adhesively secured over at least a portion of its surface to said paper ply, the bottom end of said bag being closed and sealed, a line of perforations through said cellophane liner and said outer ply extending around the top portion of said bag and spaced approximately 1½ inches downwardly from the top edge of said bag, a strip of sealer between said outer ply and said cellophane liner co-extensive with said line of perforations, said sealer filling said perforations, and said bag having a sufficient portion above said line of perforations for folding and sealing said bag above said perforations.

2. A bag comprising, a tubular outer ply, a tubular inner liner adhesively secured over at least a portion of its surface to said outer ply, the bottom end of said bag being closed and sealed, a line of perforations through said inner liner and said outer ply extending around the

top portion of said bag and spaced downwardly from the top edge of said bag, a strip of sealer between said outer ply and said inner liner co-extensive with said line of perforations, said sealer filling said perforations, and said bag having a sufficient portion above said line of perforations for holding and sealing said bag above said perforations.

3. A bag comprising, a tubular outer ply, a tubular inner liner adhesively secured over at least a portion of its surface to said outer ply, the bottom end of said bag being closed and sealed, a line of perforations through said inner liner and said outer ply extending around the top portion of said bag and spaced downwardly from the top edge of said bag, the perforations of said liner being slightly out of register with said perforations in said outer ply, a strip of sealer between said outer ply and said liner co-extensive with said line of perforations, said sealer filling said perforations, and said bag having a sufficient portion above said line of perforations for folding and sealing said bag above said perforations.

4. A bag comprising, a tubular outer ply, a tubular inner liner adhesively secured over at least a portion of its surface to said outer ply, the bottom end of said bag being closed and sealed, a line of perforations through said liner and said outer ply extending around the top portion of said bag and spaced approximately 1½ inches downwardly from the top edge of said bag, a strip of sealer co-extensive with said line of perforations, said sealer filling said perforations, and said bag having a sufficient portion above said line of perforations for holding and sealing said bag above said perforations.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,038,651 June 12, 1962

Alex G. Cloudsley

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 5, line 6, and column 6, line 8, for "holding", each occurrence, read -- folding --.

Signed and sealed this 4th day of December 1962.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents