

Feb. 20, 1945.

D. SCHMIDT

2,370,079

BAG AND METHOD OF MAKING SAME

Filed July 26, 1940

2 Sheets-Sheet 1

Fig. 1

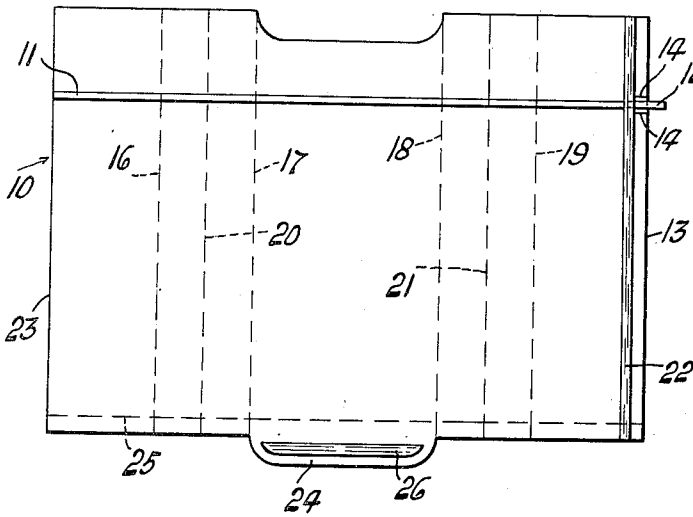


Fig. 2

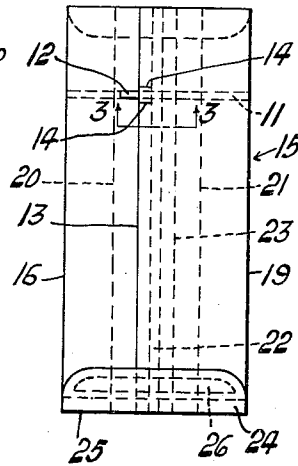


Fig. 4

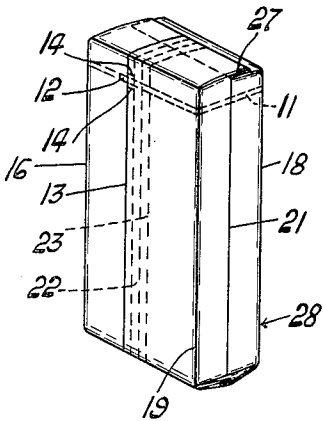
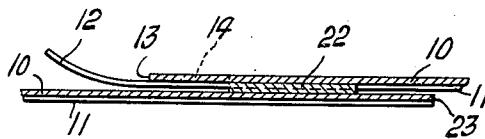


Fig. 3



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2 Sheets-Sheet 2

Fig.-5

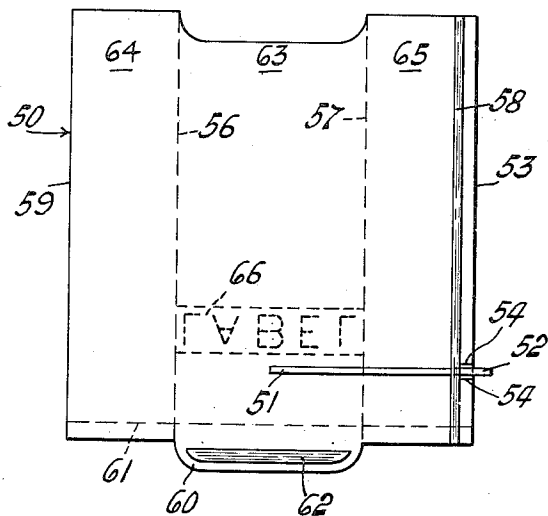


Fig.-6

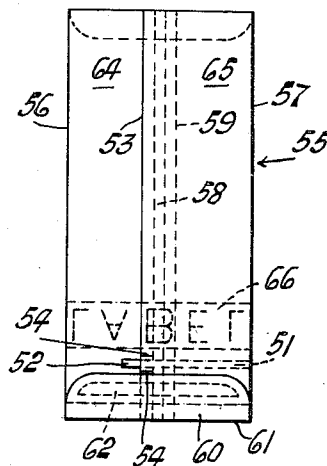
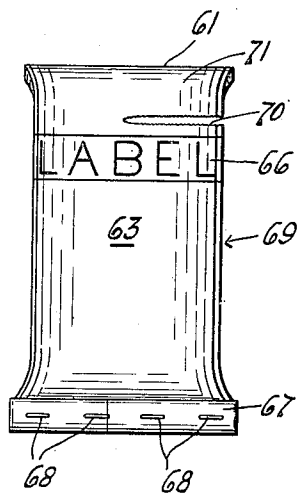


Fig.-7



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## UNITED STATES PATENT OFFICE

2,370,079

## BAG AND METHOD OF MAKING SAME

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Application July 26, 1940, Serial No. 347,731

5 Claims. (Cl. 93—1)

This invention relates to an improvement in bags and to the method of making the improved bags and, particularly, to bags adapted to be used to form packages which may be easily opened by means of a tear strip incorporated in the bag structure and to the method of making such bags.

It has become the general practice in marketing staple groceries, such as dried beans, rice, coffee, or sugar, for example, to package measured quantities of such merchandise at a central warehouse or packing plant. The packages of merchandise are then distributed to the local retail stores where the packages are sold to the consumers. In order to protect the merchandise during the handling in the warehouses and retail stores, such packages must be securely sealed. Because they may be securely and tightly sealed and because they eliminate the need for elaborate wrapping machines at the packaging plant, bags, usually carrying the necessary labels printed thereon, are the most convenient containers for packaging such merchandise. However, when bags, and especially bags of transparent sheeting, such as "Cellophane," for example, are securely and tightly sealed by an adhesive, heat seal, staples, or the like, it is often difficult to open the packages manually. Further, when such packages are opened manually, the bags are often so ripped and torn that they cannot be used thereafter as containers for the packaged merchandise.

It is an object of this invention to provide a bag which may be used to package merchandise and which may be readily opened manually, even though the package is tightly sealed, by means of a tear strip incorporated in the bag structure. It is another object of this invention to provide a bag which may be opened along a predetermined line so that the bag may serve as a container for the packaged merchandise after it is opened.

It is a further object of this invention to provide a bag which may be opened by a tear strip in such a manner that an end portion of the bag may serve as a closure flap after the bag is opened. Other and further objects and advantages of this invention will be apparent from the following specification, claims, and drawings, in which:

Fig. 1 is a development of a square bag made according to this invention.

Fig. 2 is an elevation of a completed bag made from the development shown in Fig. 1.

Fig. 3 is an enlarged fragmentary section of the

longitudinal seam taken along the line 3—3 of Fig. 2.

Fig. 4 is an isometric view showing a package formed by filling and sealing a bag as shown in Fig. 2.

Fig. 5 is a development of a flat bag having a modified form of tear strip.

Fig. 6 is an elevation of a completed bag made from the development shown in Fig. 5.

Fig. 7 is an elevation of an opened package made by filling and sealing a bag as shown in Fig. 6.

This invention is especially adapted to be employed in connection with tubular bags, that is, bags which are made by folding a web into a tube, severing a bag length from the tube, and forming a bottom structure in the tube. Such tubular bags are known in the art as flat, satchel bottom, square, and automatic bags, the flat and satchel bottom bags being formed from a two-ply tube and the square and automatic bags being formed from pleated tubes. To illustrate this invention, Fig. 1 shows the development of a square bag having a tear strip incorporated in the bag structure. As shown in Figs. 1 to 4, the bag is comprised of a length of web 10 of transparent film, such as "Cellophane," for example, paper, laminated film and paper, or other web stock suitable for bags. Extending transversely of the web 10 is a tear strip 11 laminated to the surface of the web which will become the inner surface of the bag formed therefrom. The tear strip 11 is preferably of single ply or laminated colored stock such as "Cellophane" or similar cellulosic sheeting, or other suitable tear strip material. In the embodiment shown in Figs. 1 to 4, the tear strip 11 extends completely across the web 10 and a portion 12 overhangs one edge 13 to provide a pull-tab. A pair of starting slits or nicks 14 are cut into the edge 13 adjacent the tear strip 11. The transverse tear strip 11 may be laminated to the web 10 by any suitable method, preferably by the method disclosed in my copending application Serial No. 340,955.

To form the bag 15, the web 10 carrying the laminated transverse tear strip 11 is formed into a tube by passing the web through a suitable former, thus folding the web along the parallel corner fold lines 16, 17, 18, and 19 and pleat lines 20 and 21. As the web 10 is folded into a pleated tube, a band of adhesive 22 is applied to the inner surface of the web 10 adjacent the edge 13 so that when the web is folded into a flat tube, a longitudinal lap seam is formed which adheres the inner surface of the web adjacent the edge 13 to

the outer surface of the web adjacent the opposite edge 25. The tear strip 11, as shown in Fig. 3, is thus interleaved between the overlapping edges 13 and 23 so that the pull-tab 12 is located exteriorly of the tube.

After the web 10 is tubed, bag lengths are cut from the web so that the bag lengths are each provided with a pasting lip 24. The severed bag length is then folded along the bottom fold line 25 and the pasting lip 24 is adhered to a wall of the bag by the band of adhesive 26 to form the completed bag 15.

Merchandise is packaged in the bag by opening the mouth of the bag and bellowing out the pleats in the side of the tube, so that the longitudinal fold lines 16, 17, 18, and 19 become the corners of the package and the pleat lines 20 and 21 lie in the side walls. After the desired amount of merchandise is placed in the opened bag, the mouth of the bag is closed and sealed. The seal, as shown in Fig. 4, is formed by simply folding the mouth of the bag until all slack is taken up and then sealing the folded mouth 27 by a suitable adhesive or heat-seal, thus forming the neat and tightly sealed package 28.

The package 28 is securely sealed and will withstand any usual amount of handling. To be opened manually, the pull-tab 12 is grasped and pulled so that the web 10, starting at the starting slits 14, is torn along the tear strip 11. Because the tear-strip 11 extends transversely of the web 10 from which the bag 15 is formed, the tear strip tears across the "grain" of the web 10, thus tearing the web evenly and close to the edges of the tear strip without starting rips or tears down the walls of the package. By pulling the tear strip 11 completely away from the package 28, the top of the package, as shown in Fig. 4, is separated from the lower portion of the package and as much of the contents may be removed as desired. The lower portion of the package then serves as a bag for the remainder of the contents.

To illustrate an embodiment employing a modified form of tear strip incorporated in a bag structure, Fig. 5 shows the development of a flat bag comprised of a length of web 50. A tear strip 51, laminated to the surface of the web which will become the inner surface of the bag formed therefrom, extends transversely of the web from approximately the center of the web. An end portion 52 may overhang the edge 53 of the web to provide a pull tab. The edge 53 is preferably provided with a pair of starting slits 54 adjacent the tear strip 51. The transverse tear strip 51 may be laminated to the web 50 by any suitable method, preferably by the method disclosed in my copending application No. 340,955.

To form the bag 55, the web 50 carrying the laminated transverse tear strip 51 is formed into a tube by passing the web through a suitable former, thus folding the web along the longitudinal fold lines 56 and 57. As the web 50 is formed into a flat tube, a band of adhesive 58 is applied to the inner surface of the web 50 adjacent the edge 53 so that when the web is folded into a flat two-ply tube, a longitudinal lap seam is formed which adheres the inner surface of the web adjacent the edge 53 to the outer surface of the web adjacent the opposite edge 59. The tear strip 51 is thus interleaved between the overlapping edges 53 and 59 so that the pull tab 52 is located exteriorly of the tube.

After the web 50 is tubed, bag lengths are cut from the web so that the bag lengths are each provided with a pasting lip 60. The severed bag length is then folded along the bottom fold line

61 and the pasting lip 60 is adhered to the back wall of the bag by the band of adhesive 62 to form the completed bag 55 having a front wall 63 defined by the fold lines 56 and 57 and a back wall comprised of the panels 64 and 65 joined together by the band of adhesive 58, the panel 64 being defined by the edge 59 and fold line 56 and the panel 65 being defined by the fold line 57 and the edge 53.

The tear strip 51 may be located substantially anywhere along the length of the web 50, but in this particular embodiment it is preferably located above the bottom fold line 51 a distance slightly greater than the distance from the bottom fold line to the edge of the pasting lip 60 so that the pull tab 52 will not be covered by the pasting lip 60 when the bag is formed. Thus, the tear strip 51 is located as close to the bottom of the bag 55 as is convenient.

If it is desired to print a label on the bag, the label 66, in this particular embodiment, is preferably printed upside-down on the outer surface of the bag, as is shown in Fig. 5. To package merchandise in the bag 55, the mouth of the bag is opened and the walls are bellied out by placing the desired amount of merchandise in the bag. The mouth of the bag is then closed and sealed. The seal, as shown in Fig. 7, is formed by simply folding the mouth of the bag until all of the slack is taken up and then stapling the folded mouth 67 with the staples 68, thus forming the tightly sealed package 69.

To be displayed, the sealed package 69 is simply inverted so that the label 66 becomes right-side-up, the sealed mouth 67 becomes the bottom closure of the package, and the tear strip 51 is located at the top of the package. To be opened manually, the pull-tab 52 is grasped and pulled so that the web 50, starting at the starting slits 54, is torn along the tear strip 51. By pulling the tear strip 51 completely away from the package, an opening 70 is provided, the opening 70 extending across the back panel 65 and slightly farther across the front wall 63 than the tear strip 51 extends.

Because the tear strip 51 extends across the "grain" of the web 50, the portion of the web 50 which is pulled away with the tear strip 51 narrows down to a short V-shaped portion beyond the end of the tear strip 51. The opening 70 permits the contents of the package to be removed and at the same time leaves a top portion 71 integral with the body of the package, which top portion 71 will serve as a closure flap after the bag is opened.

While the foregoing description of this invention has been directed particularly to tubular bags having a single center seam, it should be apparent that by adopting the same procedure of applying a transverse tear strip extending from one edge of the web from which a bag or envelope is to be formed, tear strips may be incorporated in the structure of tubular bags having a side seam or die-cut envelopes having one or two side seams. Further, while this invention is intended primarily for use in bags made from transparent cellulosic films, such as "Cellophane," or paper, which webs have a definite grain running longitudinally of the web, this invention may be employed equally successfully in bags made of synthetic resin films, for example, or similar webs which have no distinct grain running longitudinally of the web, the term "grain" being used in this specification to define the lengthwise direction of a web, rather than a

physical characteristic of the web. It is apparent, therefore, that this invention is not limited to the particular embodiments disclosed, either in whole or in part, but is limited only by the appended claims.

What is claimed is:

1. The method of forming an easily opened bag comprising the steps of laminating to the inner surface of a web a tear strip extending transversely of said web to a lateral edge of said web, forming said web into a bag body by forming a longitudinal lap seam with said lateral edge, and interleaving said tear strip between said lap seam.

2. The method of forming an easily opened bag comprising the steps of laminating to the inner surface of a web having opposite lateral edges a tear strip extending transversely of said web from one lateral edge to the opposite lateral edge, folding said web along parallel longitudinal fold lines, and adhering the inner surface of said web adjacent one lateral edge to the outer surface of said web adjacent the opposite lateral edge to form a longitudinal lap seam and to interleave said tear strip between said lap seam.

3. The method of forming an easily opened bag comprising the steps of laminating to the inner surface of a web having first and second opposite lateral edges a tear strip extending transversely of said web from a point between said first and second lateral edges to said first lateral

edge, adhering the inner surface of said web adjacent said first lateral edge to the outer surface of said web adjacent said second lateral edge to form a longitudinal lap seam and to interleave said tear strip between said lap seam.

4. The method of forming an easily opened bag comprising the steps of laminating to a surface of a web a tear strip extending transversely of said web to a lateral edge of said web, folding said web into a tube in which the web surface to which said tear strip is adhered becomes the inner surface of said tube, forming a lap seam in said tube with said lateral edge and interleaving said tear strip between said lap seam, severing a bag length from said tube, said bag length including said tear strip, and folding and adhering an end of said bag length to form a bag bottom structure.

5. The method of forming an easily opened bag which, when filled and sealed, will provide a package having an easily opened top, said method comprising the steps of forming a bag as defined in claim 4 in which the bag length is severed with respect to the included tear strip so that the tear strip is nearer the end of the bag length in which the bottom structure is formed than the other end of the bag length, and including the step of printing on the web material so that the printed indicia is right side up when the bag is turned upside down.

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