

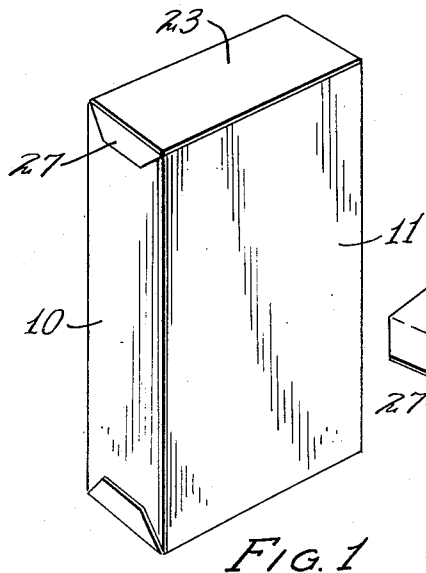
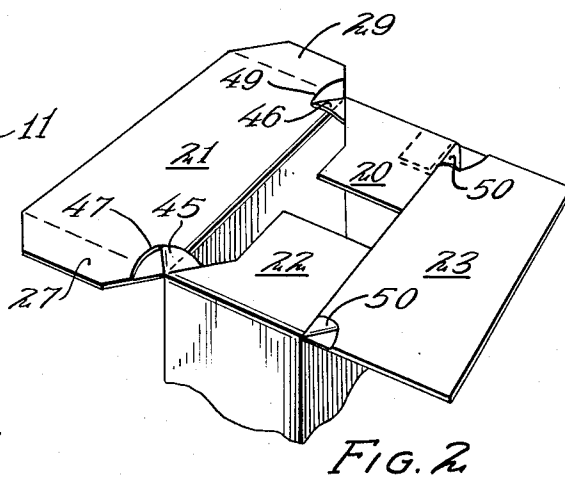
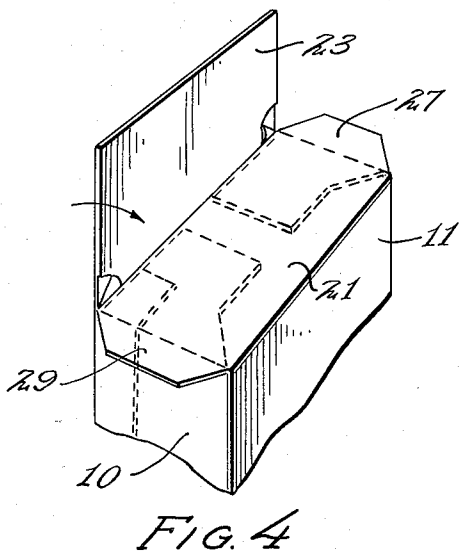
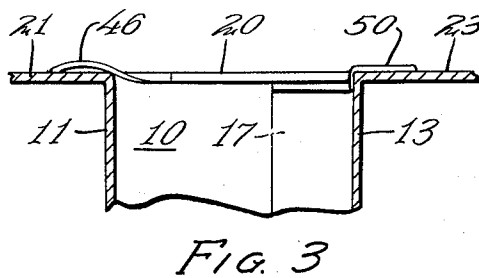
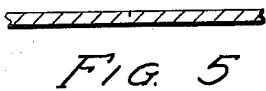
April 9, 1963

J. H. MYERS  
SIFT PROOF CARTONS

3,084,845

Filed Aug. 18, 1959

2 Sheets-Sheet 1



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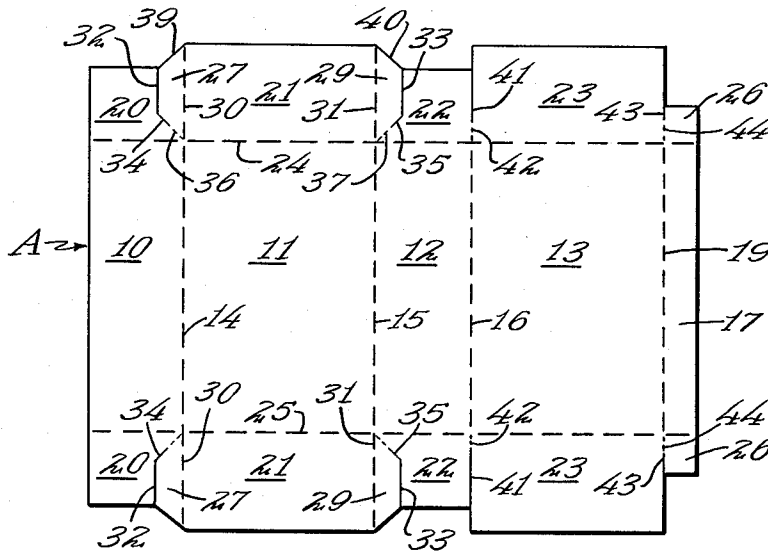


FIG. 6

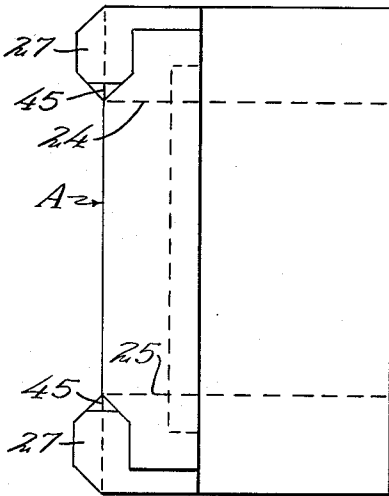


FIG. 7

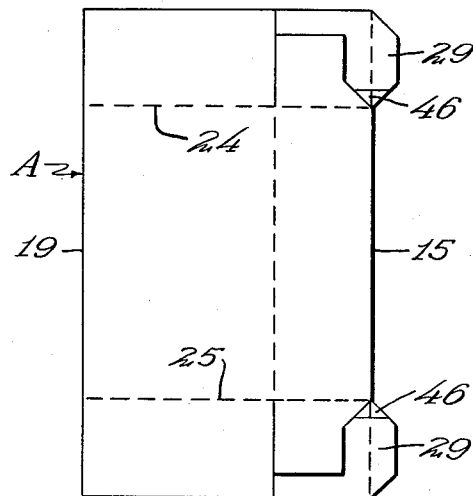


FIG. 8

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## SIFT PROOF CARTONS

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2 Claims. (Cl. 229-38)

This invention relates to an improvement in sift proof cartons and deals particularly with a carton designed to eliminate the sifting of finely divided material, and in a method of forming this carton.

For many years, cartons have been produced for containing powdered or pulverized material such as granulated soap which are of a construction known to the trade as the "Van Buren ear" cartons. These are of the general type shown in Patent 1,863,260 to John Van Buren and include ears or flaps on one of the side wall closure panels which are cut from portions of the adjoining end wall closure flaps. In sealing the cartons, these ears are folded down over the other surface of the end walls to prevent sifting of the finely divided material.

While these cartons have proven to be quite effective over a period of years, the two corners of the carton which are at the juncture between the fold lines connecting the ear bearing closure flap to its side wall panels and the fold lines connecting this side wall panel to the end wall panels have a tendency to leak due to the fact that the end wall closure flaps are usually cut away diagonally at this point to form the Van Buren ears. For many years tear corner cartons have also been produced. These tear corner cartons are normally regular paste end cartons in which the cut lines separating the closure flaps one from another terminate short of the fold lines connecting the closure flaps to their respective walls. When the flaps are closed, the flaps tear the remainder of the way to the fold lines and either form a tuft of paperboard which tends to fill the carton corners or else forms a gusset web which overlies the portion of the carton corner. However, due to the fact that the cut lines of a Van Buren ear carton are not conventional in form and due to the fact that the ears on one side of the side wall closure flap project laterally from the blank as the cartons are folded to form the manufacturer's joint, the use of tear corners in a carton of this type has not been employed insofar as I'm aware.

An object of the present invention resides in the provision of a carton of the Van Buren ear type which is provided with an unusual type of tear corner. This type of tear corner is unusual due to the fact that a part of the gusset web is formed during the gluing of the blank at the manufacturer's joint, a part of the tear corner structure is formed during the pre-breaking of the tubular carton, and the rest of the tear corner structure is formed during the closing of the carton. Thus the carton itself, as well as the method of forming the tear corner structure is believed novel and unusual.

These and other objects and novel features of the present invention will be more clearly and fully set forth in the following specification and claims.

FIGURE 1 is a perspective view of the sealed carton.

FIGURE 2 is a perspective view of the carton closure after the first step of the closing operation.

FIGURE 3 is a cross sectional view through the carton in a position illustrated in FIGURE 2.

FIGURE 4 is a perspective view similar to FIGURE 2 and showing a later step in the closing operation.

FIGURE 5 is an enlarged sectional view through a portion of the carton showing the cut score in the outer surface thereof which tends to form the tear corner web.

FIGURE 6 is a diagrammatic view of the blank from which the carton is formed.

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FIGURE 7 is a plan view of the folded blank which is closed at the manufacturers joint.

FIGURE 8 is a plan view of the carton in prebroken form.

As indicated in FIGURE 6 of the drawings, the carton A includes an end wall panel 10, a side wall panel 11, an end wall panel 12, and a side wall panel 13 connected along parallel fold lines 14, 15 and 16. A glue flap 17 is connected to an end panel of the series, such as the side wall 13 along a fold line 19.

In the particular arrangement illustrated, both enclosures are of identical form. Obviously, however, one of the end closures may be of conventional form if desired if the carton is to be sealed over a mandrel.

End closure flaps are connected to the upper and lower edges of the panels along substantially common lines of folds 24 and 25. Closure flaps 20, 21, 22 and 23 are foldably connected to the panels 10, 11, 12 and 13 respectively. Glue flap extensions 26 are connected to the ends of the glue flap 17 along continuations of the fold lines 24 and 25.

Ears 27 and 29 are foldably connected to the edges of the closure flap 21 along fold lines 30 and 31 respectively which are continuations of the fold lines 14 and 15. The ears 27 and 29 are defined by cut lines 32 and 33 which are parallel to the fold lines 30 and 31 and by diagonal cut lines 34 and 35 which extend from the end of the cut lines 32 and 33 diagonally toward the corners of the carton or toward the intersection of the fold lines 24 and 25 and the right angular fold lines 14 and 15. Cut score lines 36 and 37 connect the ends of the cuts 34 and 35 to the intersection described. The cut lines 34 and 35 terminates short of the intersection a distance desired to provide webs of a desired length. The cut scores are in the outer surface of the carton board.

In the arrangement illustrated, the corners of the ears 27 and 29 are diagonally cut off along cut lines 39 and 40 so as to make the ears symmetrical in appearance. Obviously, this is not essential as the shape of the ears may vary to some extent.

In preferred form, the flaps 22, and 23 are separated by cut lines 41 which terminate short of the juncture between the fold lines 16 and the fold lines 24 and 25. A short cut score line 42 extends from the inner end of the cut lines 41 to the adjoining fold lines 24 and 25, these cut scores also being in the outer surface of the carton board.

The glue flap extensions 26 are separated from the closing flaps 23 by cut lines 42 which terminate short of the juncture between the fold line 19 and the fold lines 24 and 25. Cut scores 44 extend from the ends of the cut lines 43 to these junctures, the cut scores being in the outer surface of the carton board.

The blank illustrated in FIGURE 6 is next folded into the form illustrated in FIGURE 7. The panel 13 is folded along the fold line 16 to overlie the adjoining portions of the panels 11 and 12 and the end panel 10 is folded to overlie the glue flap 17, the closure flaps 20 overlying the glue flap extensions 26. During this operation, the closure flaps 21 with the attached ears 27 and 29 remain flat. Accordingly, as the folding operation takes place, a web of paper board 45 is peeled from the inner surface of the ears 27. The webs 45 are relatively thin and are formed by tearing the liner of the paper board from the outer portion of the board.

If desired, during the gluing operation, the carton may be prebroken along the fold line 15, this operation tearing webs 46 from the ears 29. Alternatively, these gusset webs 46 may be formed when the glued blank is prebroken along the fold lines 15 and 19 which takes place in the closing machine prior to sealing the carton ends.

It might be stated, by way of explanation, that when the cartons are to be closed, it is common practice to fold the cartons from the position illustrated in FIGURE 7 to a position shown in FIGURE 8 so that all of the folds are prebroken, thus preventing the tendency of the carton to distort during a sealing operation.

From the position illustrated in FIGURE 8, the carton A is folded back into rectangular form. The end wall closure flaps 20 and 22 are folded into coplanar relation as illustrated in FIGURE 2 of the drawings, and the closure flaps 21 and 23 are folded outwardly onto a common plane. During this operation, the length of the gusset webs 45 and 46 is increased, these webs tearing into the body of the closure flaps 21 as indicated at 47 and 49. Assuming that the ends of the ears are cut at an angle of 45°, the gusset webs 45 will tear inwardly to about 45° from the carton corners.

As the end wall closure flaps 20 and 22 are folded inwardly, and the closure flap 23 is folded outwardly, gusset webs 50 are torn from the surface of the closure flap 23 as also indicated in FIGURE 2. As a result, webs are formed in all four corners of the carton.

Adhesive is applied to the desired areas and the carton is closed in the conventional manner, usually by folding the closure flap 21 inwardly to overlie the end wall closure flaps 20 and 22 and then by folding the closure flap 23 to overlie the flap 21. As a final step of the sealing operation, the ears 27 and 29 are folded down to overlie the end wall panels 10 and 12 and are adhered thereto.

The formation of gusset webs between the ears 27 and 29 and the end wall closure flaps is unusual in that these webs are partially torn during the formation of the manufacturer's joint and during the prebreaking of the carton. These gusset webs are increased in size as the closure flaps are folded during the process of sealing the ends of the carton. While the formation of gusset webs between the end wall flaps 20 and 22 and the side wall flap 23 is not particularly unusual except the fact that one of these webs is formed between the flap and a glue flap extension, the method of forming a Van Buren ear carton with tear corners is believed novel. The webs 45 and 49 are of particular importance in the combination as they tend to prevent leakage at the carton corners which are by far the most susceptible to leakage in a carton of this type.

In accordance with the patent statutes, I have described the principles of construction and operation of my improvement in sift proof cartons, and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A method of closing a carton blank including an end panel, a side panel, a second end panel and a second side panel foldably connected in series, said first and second side and end panels having first and second side and end panel closure flaps foldably connected thereto along a substantially common line of fold, said first side wall closure flap having ears foldably connected to the side edges thereof along fold lines which are generally extensions of the fold lines connecting said first side panel to said first and second end panels, said ears being cut from said first and second end panel closure flaps and

having end edges extending diagonally from the junctures between said common line of fold and the fold lines connecting said first side panel to said end panels, the ears being separated from said first and second end panel closure flaps along cut lines terminating short of said junctures, and cut score lines extending from the ends of said cut lines to said junctures, the method including the steps of folding the blank along the fold line connecting said first end panel and said first side panel, partially tearing a web of paperboard from the ear on said first side panel closure flap projecting beyond said last mentioned fold line, folding the blank along the fold line connecting the second side panel and the second end panel, securing the ends of the blank into tubular relation, folding the tubularly arranged panels along the fold line connecting the first side panel and the second end panel and simultaneously tearing a web from the other of said ears, folding the end panel closure flaps inwardly and the side panel closure flaps outwardly to further tear said webs into said first side closure flap, and closing said side panel closure flaps inwardly into superimposed relation.

2. A carton including opposed parallel first and second side panels and first and second opposed parallel end panels and first and second opposed parallel end panels secured in tubular relation, first and second side and end panels having first and second side and end panel closure flaps foldably connected thereto along a substantially common plane, said first side wall closure flap having ears foldably connected to the side edges thereof along which are generally continuations of the fold lines connecting said first side panel to said first and second end panels, said ears being cut from said first and second end panel closure flaps and having end edges extending diagonally from the junctures between said line of fold on said common plane and the fold lines connecting said first side panel to said end panels, the ears being separated from said first and second end panel closure flaps along cut lines terminating short of said junctures, and cut score lines extending from the ends of said cut lines to said junctures, the carton end panel closure flaps being folded into a common plane, generally triangular webs of paperboard torn from the inner surfaces of said ears at said cut score lines and the adjoining portions of said first panel closure flap and connected along one edge of each web to the inner surface of said first side panel end closure flaps and along an adjoining edge of each web to the edge of the adjacent end panel closure flap at said cut score lines, said first side panel closure flap overlying said end panel closure flaps and secured thereto and said triangular webs being folded centrally and underlying said first side wall closure flap, said ears being secured to the outer surfaces of said end walls, and said second side wall closure flap being secured in face contact to said first side wall closure flap.

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