

May 29, 1962

W. G. LIESCHKE

3,036,756

CONTAINER CLOSURE

Filed Jan. 11, 1960

2 Sheets-Sheet 1

Fig. 1.

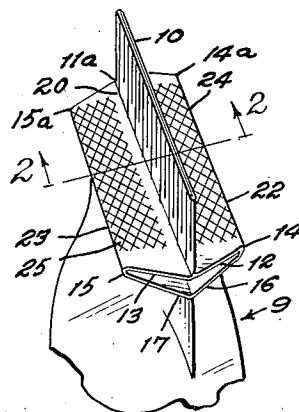


Fig. 2.

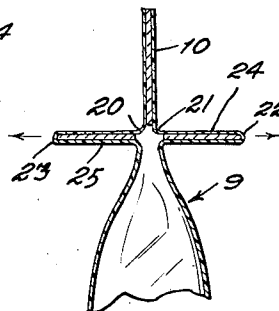
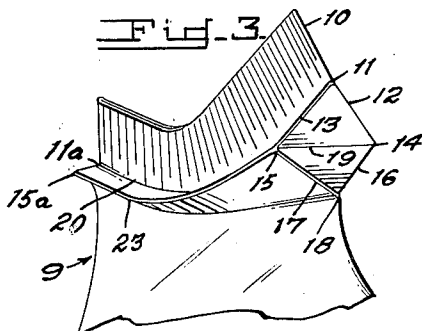


Fig. 3.



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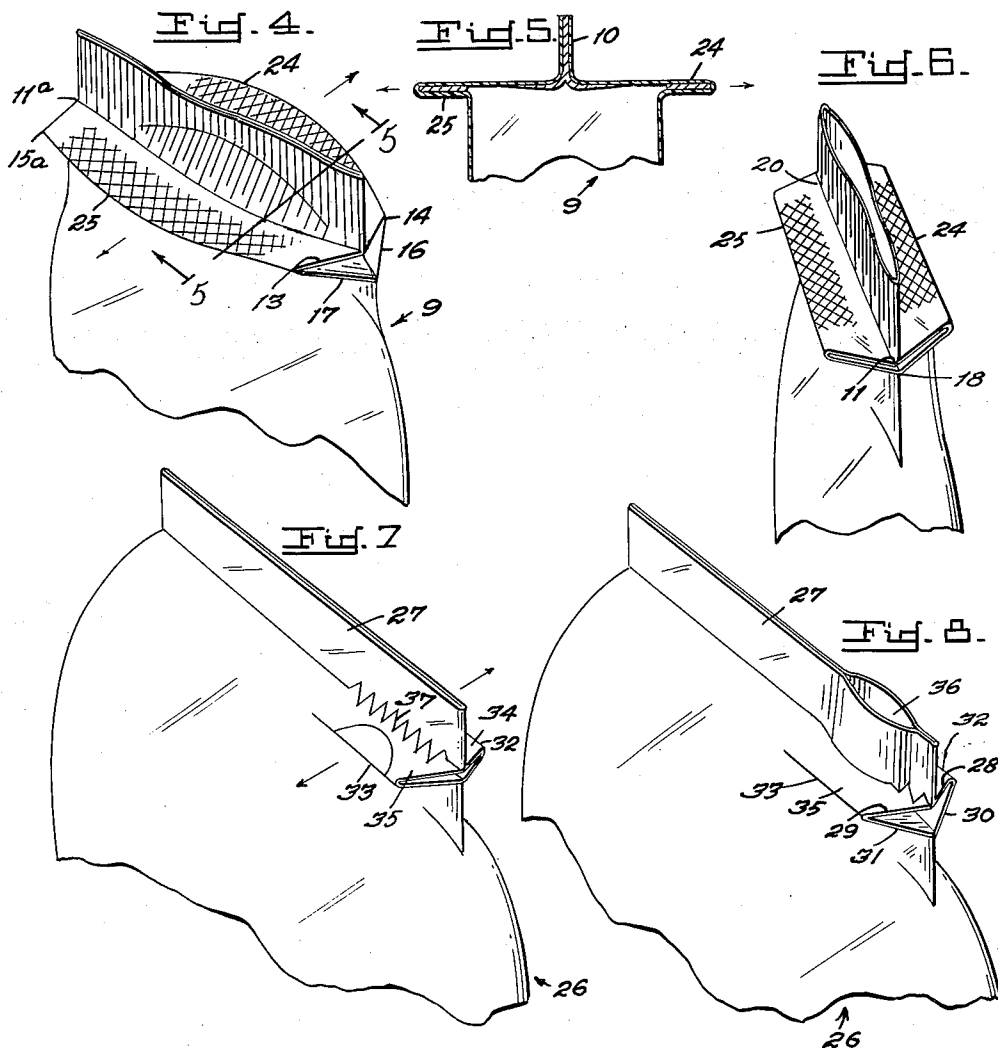
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CONTAINER CLOSURE

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5 Claims. (Cl. 229-66)

This invention relates to containers and, more particularly, to flexible bags made of sheet material such as organic pellicles of cellophane and like materials having the general characteristics of strength, flexibility and, when desired, transparency.

It is an object of the invention to provide a container of the type mentioned, embodying a closure which maintains the container securely sealed and which is easily opened when access to the contents is desired.

Another object is to provide a bag embodying a closure seam which can be readily opened without tearing or cutting of the material thereof.

A still further object is to provide a container as aforesaid, wherein the adhesively or heat-sealed sides forming the closure seam, start to separate at the bottom of the inside or inner edge, thereby obviating the danger of tearing the container material.

Yet another object is the provision of a bag of the type mentioned, wherein the possibility of spilling the contents while opening, is greatly reduced.

Another object is to provide a seam in a container of the kind mentioned, which may be opened by a simple pull exerted between areas of the sides of the container at or just below the lower edge of the seam.

Still another object is to provide a seam for a flexible-walled container, wherein the sealed sides forming the seam, are readily separated when desired, to afford access to the contents of the container, and which has a self-closing or "snap-shut" action sufficiently powerful to maintain all or a portion of the contents without spilling, even when held in inverted position.

Another object is to provide a bag for edible products such as peanuts, candy and popcorn, and which is attractive in appearance, efficient in holding the contents confined substantially air tight, easily opened without tearing of the bag material, and useful until the entire contents are dispensed, consumed or used.

A still further object is the provision of a container of the type mentioned, wherein the closure seam, when partially opened, also affords a pouring spout as in the case of pulverulent materials.

Another object is to provide a bag which affords an inexpensive, secure, easily-opened, attractive and generally satisfactory container for a wide range of pulverulent and granular materials and in a wide range of batch weights per bag.

Other objects and advantages of the invention will become apparent to those skilled in the art, after a study of the following detailed description in connection with the accompanying drawing.

In the drawing:

FIGURE 1 is a perspective view showing the top seam of a bag embodying the features of the invention including a self-closing or "snap-shut" feature and showing the sides of the bag pushed outwardly from the center line as by the contents above mentioned which are sealed in the bag;

FIGURE 2 is a sectional view taken in a plane identified by line 2-2, FIGURE 1;

FIGURE 3 is a perspective view showing the side folds of the bag of FIGURE 1;

FIGURE 4 is a view showing the manner in which a bag constructed according to FIGURE 1, opens from the lower edge of the seam in response to a pull on its tabs;

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FIGURE 5 is a section taken in a plane identified by line 5-5, FIGURE 4;

FIGURE 6 is a perspective view showing the self-closing or "snap-shut" action of a previously opened bag;

FIGURE 7 shows a modification of the construction of FIGURE 1 and which is particularly well adapted to bags of relatively large size;

FIGURE 8 is a perspective view corresponding to FIGURE 7 and showing how the seam is opened at one end to provide a pour spout;

Referring in detail to the drawing, 9, FIGURE 1, identifies generally a container or bag of thin, flexible thermoplastic material of which rubber, cellophane and polyethylene are examples, which may be transparent, and sealed by adhesive preferably of pressure sensitive type or by heat so as to be firmly closed. The blanks may be formed by cutting tubular stock into proper lengths, or by folding sections of flat stock longitudinally and uniting the opposite edges.

The lower seam which is not shown in the drawings is formed by heat sealed lines in a known manner, along closely-spaced parallel lines of equal length extending longitudinally of the container to form a fluid-tight seam. The top seam 10 is likewise formed with closely-spaced parallel heat-sealed lines extending downwardly from the edge thereof. Unlike the lower seam, however, alternate seal lines may be of different lengths. That is to say, every other line may extend a short but appreciable distance below the ends of the adjacent lines so that when the sides of the bag are pinched just below the center portion of the seam, and pulled apart, the separation of the sealed areas starts along the ends of longer lines and then extends to and along all of the lines to and through the top edge of the seam. Thus the sealed areas forming the seam are securely held against separation from the top downwardly, but are readily separated when opening is initiated at the lower edge of the seam from within the bag.

Of course, the arrangement shown, wherein a shorter line is interspaced between two lines of greater length, is by way of example only and may be varied in numerous ways without greatly affecting the advantageous function attained. For example, every third line only might be longer, or the lines may be progressively varied in length so that their lower ends define a sinuous or zigzag line transversely across the bag to thereby facilitate initiation of opening of the seam from below and inside. Likewise the seam may be formed by uniting the confronting areas of the bag material forming the top seam, by means of an adhesive.

In prior art bags or containers of the type involved, it was difficult to effect opening of the seam without tearing or cutting of the bag material, and frequently resulted in exasperation and frustration on the part of the individual trying to gain access to the contents. Furthermore, after opening in such a manner, the contents had to be consumed or dispensed at once. Otherwise the remaining contents would frequently find their way into a pocket or handbag and have to be laboriously removed and discarded by turning the pocket inside out or by emptying of the handbag.

By my invention a clean tear-free opening of the seam is assured with the result that the contents can be used, dispensed, consumed or eaten as desired.

Just below the seam 10, at the ends thereof, the material of the bag is folded downwardly and inwardly along lines 12 and 13, from a common point 11 on the side edge fold of the bag, to points 14 and 15, respectively, thence from points 14 and 15, downwardly and outwardly, along lines 16 and 17, to common point 18 also on the side edge

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fold. This creates two facing right-angled triangles having a common hypotenuse 19.

In the species being described, the construction of folds just described, is duplicated at the other end of the seam, that is, at the left end as the parts are viewed upon FIGURE 3. As shown upon FIGURES 1, 2 and 3, folds or creases 20 and 21 in the respective sides of the bag, extend between points 11 and its counterpart 11a at the other side edge. Likewise, as best shown upon FIGURE 1, a crease or fold 22 extends between points 14 and 14a in one side surface, and another, 23, between points 15 and 15a in the other side surface. FIGURES 1 and 3 show the seam and tabs distorted somewhat, to more clearly illustrate the construction. The cross section of FIGURE 2 shows the completed seam before opening.

By this construction the sides of the bag immediately below the seam, are formed into, and define, a pair of tabs 24 and 25 which, when pulled apart insure that the seam will start to open at its bottom edge inside the bag. FIGURE 1 indicates a lattice-work of heat seal lines which, in addition to rendering each tab a rigid unitary structure, also afford a friction grip to facilitate opening of the bag or container. While the confronting areas of the bag material forming these folds or tabs 24 and 25 are shown as secured together by heat seal lines, they may be held together by adhesive. To facilitate packing and storing in minimum space the tabs 24 and 25 may be folded upwardly or downwardly against the respective side surfaces.

In opening a bag constructed according to FIGURES 1, 2 and 3, the user simply grasps the tabs 24 and 25 and pulls them apart. FIGURES 4 and 5 show a seam thus partly opened and illustrate how the sides of the bag begin their separation at the lower central edge of the seam so that the opening progresses upwardly and outwardly toward the top and ends. In this form of the invention the tabs possess a moderate but effective degree of stiffness and inherent resiliency which causes them to tend to resume their original coplanar state as depicted upon FIGURE 6. In this position the folds 20 and 21 are contiguous and parallel so that the tabs act automatically to reclose the opening as soon as the pull upon them is released. They thus afford a "snap-shut" action which is very effective in holding material within the bag, even when it is held in inverted position. In bags of the size shown, the action is sufficiently strong to keep articles such as peanuts from spilling when the bag is held upside down. In containers of smaller sizes such as might be used for pills or lozenges, the action is even more powerful so that a cellophane-type envelope securely maintains the contents against loss, spilling or contamination, until completely used.

FIGURES 7 and 8 show a modified form of container particularly useful in bags of larger sizes where a spout is often desirable for safe and accurate dispensing of the material such as sugar, salt, or other pulverulent or granular materials. In this form of the invention, bag 26 has its top seam 27 formed by heat sealing or adhesively securing the top inside surfaces together. However, unlike the species of FIGURES 1 through 6, the tab-defining folds are formed at one end only of the seam. Since the single fold is essentially like that described in connection with FIGURE 1, etc., it is sufficient to identify folds 28, 29, 30 and 31, defining a square area folded along its diagonal transversely of the bag. Creases 32 and 33, instead of extending fully across the bag, terminate and merge into the material thereof at points less than half way to the other end of the seam. The tabs 34 and 35 thus formed may be grasped to open the seam over and along a relatively short distance from the corresponding end, to thereby form a pouring spout 36. This construction has the same self-closing or "snap-shut" action as that previously described in connection with FIGURES 1, 2 and 3 and, moreover, affords the same ease and certainty of opening; and since the seam is opened starting at one end thereof, it may be only partly opened to form a convenient pour

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spout, or opened all the way across where rapid and complete dispensing of the material is required. In this form, when the seam is but partially opened, a powerful snap-shut action is provided which maintains the container closed and prevents contamination of the contents remaining therein.

It will be understood, of course, that the seam of the container shown at FIGURES 7 and 8 may be formed by the same heat seal lines as in the species previously described, and having alternate lines terminating below the intermediate lines. Or the seam may be formed by adhesively securing the sides together in such a manner that its lower edge is of sinuous or zigzag shape. These lines of different lengths and the alternative sinuous, saw-tooth or zigzag shape of the lower edge of the seam may extend all the way across the bag or, alternatively, only over a distance from one end coextensive with the pouring opening 36, as indicated at 37, FIGURE 7.

I have thus provided a flexible-wall container which attains all of the objects stated. A pull exerted between the tabs causes the seam to open, beginning at its lower edge. This opening is facilitated by the arrangement of seal lines having their lower ends defining an uneven or zigzag path. After opening, the high inherent strength and resiliency of the tabs and their resistance to deformation in their respective planes, causes them, when coplanar as in FIGURE 2, to hold the sides of the opened seam together and thus act very effectively to maintain the contents of the bag against spilling and contamination. Likewise, those contents are readily accessible merely by pulling the tabs apart or exerting pressure against the two ends of the opened seam. This opening action is aided by the automatic simultaneous turning of the tabs upwardly or downwardly about fold lines such as 20 and 21.

While I have disclosed the preferred form of the invention as now known to me, various modifications and substitutions of equivalents will be obvious or readily occur to those skilled in the art after a study of the foregoing specification. Hence the foregoing disclosure should be taken in an illustrative sense only; and it is my desire and intention to reserve all modifications within the scope of the subjoined claims.

Having now fully disclosed the invention, what I claim and desire to secure by Letters Patent is:

1. A package comprising the packaged material enclosed in a tubular length of flexible sheet material having one end flattened and formed into a transverse seal area comprising confronting areas separably sealed together with a separable seal, and projecting rib means extending transversely of said container parallel to, and adjacent, said transverse seal, each comprising a transverse fold of the material of the container extending outwardly at an angle to the side of the bag and having its confronting areas sealed in face to face relationship, said ribs forming pull tabs adapted to be pulled to exert a force transversely of said seal area for separating the seal thereof, and projecting ribs tending to resiliently maintain said bag in closed position after separation of said seal, to thereby retain the packaged material enclosed in the package.

2. A package comprising the packaged material enclosed in a tubular length of flexible sheet material having one end flattened and formed into a transverse seal area comprising confronting areas separably sealed together with a separable seal, and projecting rib means extending transversely of said container parallel to, and adjacent, said transverse seal, each comprising a transverse fold of the material of the container extending outwardly at an angle to the side of the bag and having its confronting areas sealed in face to face relationship, said ribs forming pull tabs adapted to be pulled to exert a force transversely of said seal area for separating the seal thereof, and projecting ribs tending to resiliently maintain said bag in closed position after separation of said

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seal to thereby retain the packaged material enclosed in the package, the material of said container at the end of the seal area being outwardly creased to form the ends of the ribs, and having an inward crease extending from the outer ends of the ribs transversely of the bag to define two triangles having a common hypotenuse lying transversely of, and below, the seal area, the triangles being located at the lower ends of the seal area.

3. A package comprising the packaged material enclosed in a tubular length of flexible sheet material having one end flattened and formed into a transverse seal area comprising confronting areas separably sealed together with a separable seal, and projecting rib means extending transversely of said container parallel to, and adjacent the lower edge of said transverse seal, each comprising a transverse fold of the material of the container extending outwardly at an angle to the side of the bag and having its confronting areas sealed in face to face relationship, said ribs forming pull tabs adapted to be pulled to exert a force transversely of the inner portion of said seal area for separating the seal thereof, and as projecting ribs tending to resiliently maintain said bag in closed position after separation of said seal to thereby retain the packaged material enclosed in the package.

4. A package comprising the packaged material enclosed in a tubular length of flexible sheet material having one end flattened and formed into a transverse seal area comprising confronting areas separably sealed together with a separable seal and projecting rib means extending transversely of said container parallel to, and adjacent the lower edge of said transverse seal, each comprising a transverse fold of the material of the container extending outwardly at an angle to the side of the bag and having its confronting areas sealed in face to face relationship, said ribs forming pull tabs adapted to be pulled to exert a force transversely of the inner portions of said seal area for separating the seal thereof, and as projecting ribs tending to resiliently maintain said bag

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in closed position after separation of said seal to thereby retain the packaged material enclosed in the package, the material of said container at the end of the seal area being outwardly creased to form the ends of the ribs, and having an inward crease extending from the outer ends of the ribs transversely of the bag to define two triangles having a common hypotenuse lying transversely of, and below, the seal area, the triangles being located at the lower ends of the seal area.

5. A package comprising the packaged material enclosed in a tubular length of flexible sheet material having a pair of flat rectangular faces and having one end flattened and formed into a transverse seal area with a separable seal, comprising confronting areas separably sealed together, and projecting rib means extending transversely of said container parallel to, and adjacent, said transverse seal, each comprising a transverse fold of the material of the container extending outwardly at an angle to the side of the bag and having its confronting areas sealed in face to face relationship, said ribs forming pull tabs adapted to be pulled to exert a force transversely of said seal area for separating the seal thereof, and as projecting ribs tending to resiliently maintain said bag in closed position after separation of said seal to thereby retain the packaged material enclosed in the package.

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