July 31, 1962 E. J. MONAHAN ET AL 3,047,206

CLOSURE MEANS

Filed May 18, 1960 3 Sheets-Sheet 1

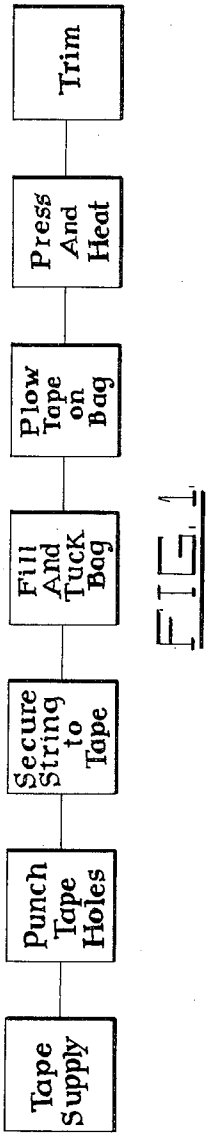



FIG. 1

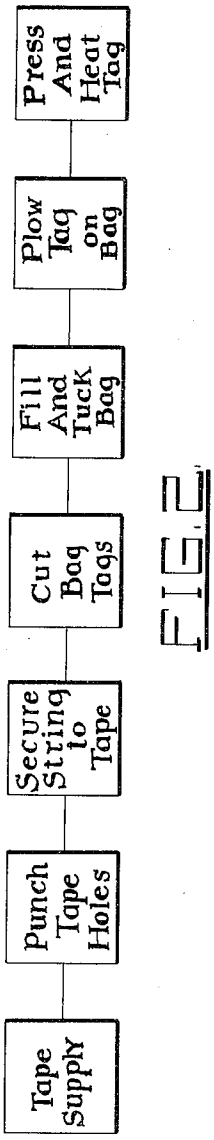



FIG. 2

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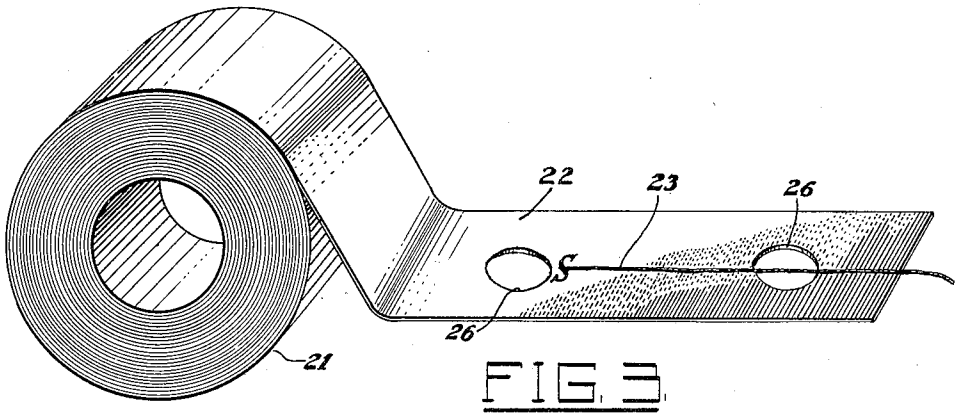



FIG. 3

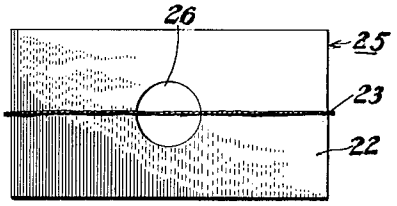



FIG. 4

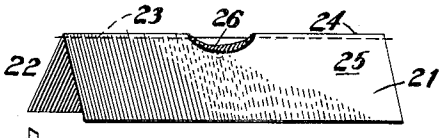



FIG. 5

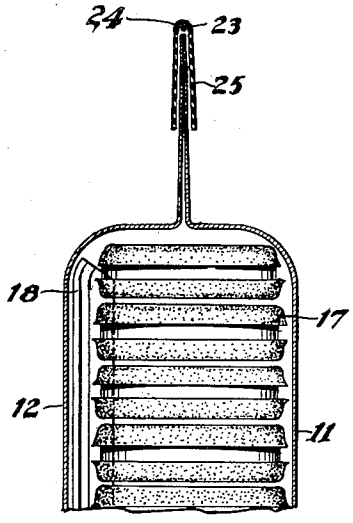



FIG. 7

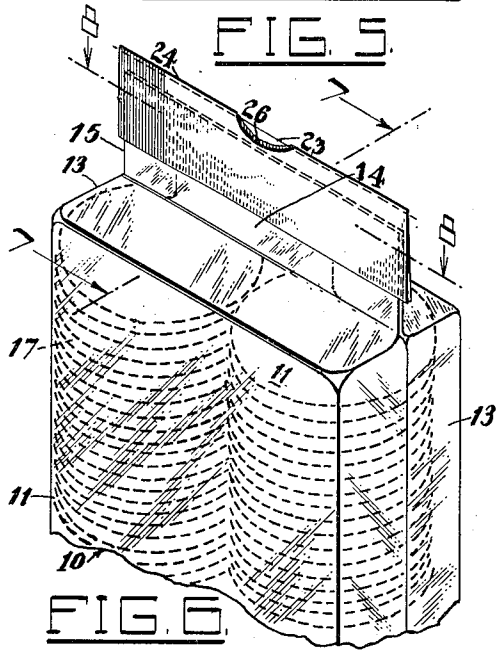



FIG. 6

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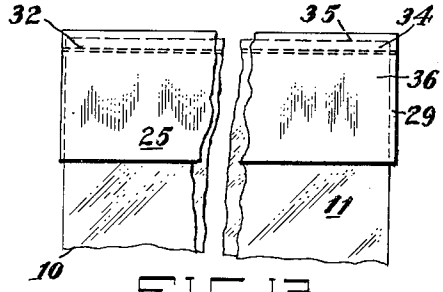



FIG. 13

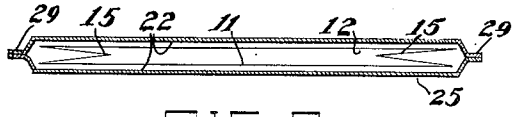



FIG. 8

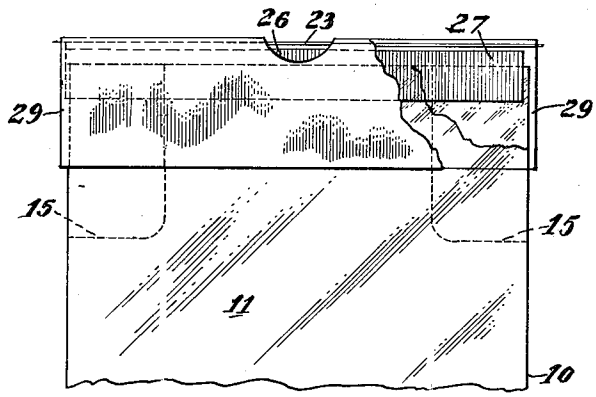



FIG. 9

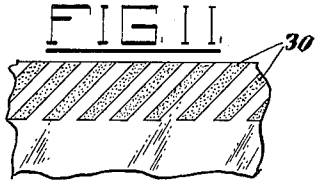



FIG. 11

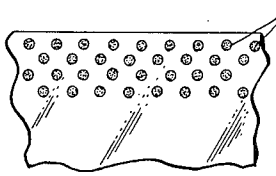



FIG. 12

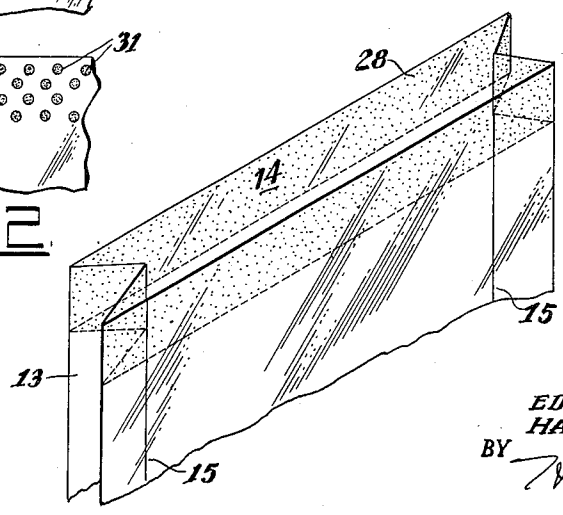



FIG. 10

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United States Patent Office 3,047,206 Patented July 31, 1962



3,047,206

# CLOSURE MEANS

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Filed May 18, 1960, Ser. No. 29,839
5 Claims. (Cl. 229—66)

The present invention relates to improved closures for packaged consumer goods, and more particularly to a sealed closure for a preformed bag type of package which permits the sealing, opening and reclosing of the bag without rupturing the mouth of the bag structure.

One form of bag closure which has been used extensively, and is still in use, is that disclosed in U.S. Letters Patent No. 2,051,106, and commonly known as a "bag tag." With this form of closure the walls of the bag bordering the open end or mouth of the bag are collapsed and interfolded with the bag closure and mechanically locked thereby to form the closure. The bag closure may be removed and the bag opened, and after some of the contents have been removed from the bag it can be closed and locked again in the original manner.

Another form of bag closure utilizes the thermoplastic property of certain bag materials such as cellophane film. Bags made of such film are sealed by conventional heat-sealing techniques.

It is, therefore, an important object of the present invention to provide in a bag type package a combination bag tag and bag sealing closure which does not require the sealing of the bag walls directly to one another.

Another object of the present invention is to provide for a bag type package an improved closure which is sealed to and straddles the mouth of the bag and is easily opened without significant injury to the bag.

Yet another object of the invention is to provide an improved bag closure which in combination with the bag is adapted to effect sealing of said bag without sealing the bag walls to one another, and which can be readily opened, and which can be utilized after opening to effect suitable reclosing of said bag.

Still another object of the invention is to provide an improved bag closure comprising a heat sealable sheet which in assembly with the mouth of a bag comprises a pair of oppositely facing folded ends straddling said mouth, each folded sheet end being heat sealed to said bag, the closure portion adjacent the juncture of the folded ends of said closure having a tearable unsealing means for providing access into said bag mouth, and the remaining portion of said closure constituting means for suitably closing said bag.

Another object of the invention is to provide a closure for bag type packaging as aforesaid which is adapted to render the packaging effectively reclosable.

Other objects, features and advantages of the present invention will be apparent to those skilled in the art from the following details of certain embodiments thereof.

To this end, and in its broad aspects, the present invention comprises a combination bag closure and bag label of flexible material formed to be folded over the collapsed mouth of a bag type package so as to engage the opposite outer walls thereof and to extend laterally beyond the opposite side edges of said walls, the opposed faces of the bag closure being adhesively secured to said walls throughout their extent and to one another beyond the side edges of said walls. Preferably, the invention provides a bag closure which is formed of material such as aluminum or other metal foil which is capable of being folded into a "dead bend" i.e., when folded it does not tend to spring back to its original position. The surface of the bag closure which engages the walls of the bag is provided with a coating of thermoplastic or heat fusible material preferably having a melting point lower than that of the material of which the bag itself is made (if thermoplastic). By the application of heat equal to or higher than the melting point of said coating, but lower than the melting point of the bag material or coating thereon, the bag closure is secured to the walls of the bag without said walls becoming fused to one another. Thus, the bag may be opened merely by breaking the bag closure along the fold line thereof where it is bent over the mouth end of the bag. In order to facilitate this, means such as a tear string, is fixed to the bag closure along the fold line of the closure. By pulling on the string the tag is neatly torn throughout its length and the mouth of the bag is free to be opened. The walls of the bag, thereafter, with the bag closure halves still firmly adhered thereto, may be collapsed and folded over within the area of the bag closure; and the dead bend of the bag closure halves serves to hold the bag in reclosed condition. The bag may be reopened and reclosed as often as desired thereafter.



Other aspects of the invention, which will be developed in the detailed description to follow, include the form of the bag tag, the method of manufacture and the use thereof.

Referring to the drawings:

FIG. 1 is a diagrammatic illustration of a preferred sequence of steps that may be employed in the practice of the present invention in forming a bag closure;

FIG. 2 is a diagram similar to that shown in FIG. 1, but showing a modification thereof;

FIG. 3 is a view in perspective illustrating a sequence of steps that may be employed in preparing from a continuous strip of material a bag closure illustrating the principles of the present invention;

FIG. 4 is a plan view of a portion of the bag closure shown in FIG. 3 in open condition;

FIG. 5 is a perspective view of the bag tag shown in FIG. 4 in partially folded condition;

FIG. 6 is a perspective view of a bag assembly having a closure embodying the principles and practices of the present invention;

FIG. 7 is a sectional view taken along line 7—7 of FIG. 6, showing details of the bag closure;

FIG. 8 is a sectional view, taken on the line 8—8 of FIG. 6;

FIG. 9 is a fragmentary elevational view of a modified form of closure partly broken away to show details of construction;

FIG. 10 is a fragmentary perspective view of the partially open mouth of the bag shown in FIG. 6, subsequent to the unsealing of the bag closure.

FIGS. 11, 12 and 13 are fragmentary views of still other modifications of the mouth ends of bags.

Shown in FIG. 6 is an assembly of a sealed bag provided with a bag closure tag embodying the principles and practices of the present invention.

As best seen in FIGS. 6 to 10 there is shown a conventional preformed bag **10** made of cellophane polyethylene or other suitable material, preferably transparent and comprising two generally rectangular panels, a front panel **11** and a back panel **12** joined by side panels **13**, each side panel **13** having in the vicinity of mouth portion **14** a gusset or a tucked in pleat **15**. A bottom wall (not shown) closes one end of the preformed bag structure, the opposite or mouth end portion **14** being open for the insertion of the goods to be packaged in the bag.

The use of a bag of this character in the baking industry is shown in the drawings, merely by way of illustration, it being understood that the closure of the present invention is susceptible of use in connection with bags of various shapes and materials.

In accordance with the invention the bag closure **25** of the invention comprises a thin base sheet of metal foil **21**, preferably aluminum, having on one side thereof a coating **22** of a suitable thermoplastic material, such as microcrystalline wax having a melting point of approximately 165° F., such as that marketed by Socony Mobil Oil Company, Inc. under the trade name of "165 Victory" or a mixture of microcrystalline wax and resin such as that marketed by the Marathon Division of American Can Company under the trade name of Fibreseal PA–797. A length of string, cord, tape or the like **23** referred to hereinafter as a tear string or rip cord, is suitably secured to the closure **25**, preferably by means of glue or other adhesive material, although other means of attachment may be provided if so desired without departing from the scope of the invention. For example, the tear string may be sewn into the metal foil. Another method of attaching the tear string **23**, by way of example, contemplates the use of a notched roller which, under pressure, applies the cord lengthwise on a line medially of the side edges of the foil tape. The resin glue, being a fast setting adhesive, will cause the cord to adhere to the tape in the position shown in FIG. 3.

As shown in FIG. 5, the tear string **23** defines the fold line **24** of the bag closure **25**. In order to facilitate grasping the tear string **23**, one or more spaced apertures **26** may be provided in the closure **25**. As illustrated in the drawing the apertures **26** are conveniently located along the longitudinal centerline of the bag closure **25** and are symmetrically disposed with respect to the tear string **23**.

In the assembly of packaged goods bearing the closure device of the present invention, a series of transparent bags are advanced along a conventional automatic loading machine where each bag is filled to a proper level. As the loaded bags move from one station to the next the pleats **15** are tucked in and the mouth collapsed to prepare the bag for the reception of the bag closure **25**. As the filled bags are advanced by the conveyor belt, the prepared foil tape with its adhesively attached rip cord **23** is fed into registry with the closed bags, the rip cord of the tape being seated atop the mouth of its associated bag.

The prepared foil tape is then folded over the mouth ends of the bag into engagement with the outer sides, **11** and **12**, of the bag panels, the fold line of the foil tape overlying the terminal edges of the bags and the adhesively-attached rip cord confined within the folded halves of the foil tape.

The bag and tape are then conveyed through a heat sealing zone during which step the opposed portions of the folded tape **25** are forced under pressure against the front and back panels, **11** and **12**, of the bag. This step is performed with a pair of opposed heat-sealing elements, not shown, both of which are sufficiently heated to fuse the low melting thermoplastic coating of the laminated foil tape to the mouth of the bag in the manner indicated in FIGS. 7 and 8. The fusing point of the coating, being within a range of approximately 125° to 165° F., is substantially lower than the lowermost degree at which the plastic bag, usually cellophane material which will soften and fuse at about 220° F. As a result, the foil tape **25** will become effectively sealed with the front and back panels of the bag, thus closing and sealing the mouth of the bag without, however, sealing the bag panels together. A portion of the rip cord **23** will now lie exposed across the top of the apertures **26** (FIGS. 5 and 6).

The final step now remains to sever the folded tape which, at this step, connects the series of bags which have now been filled and sealed. The tape is severed at a point approximately ⅛" beyond the side edge of each bag, thus forming overlapped extensions **29** (FIGS. 6, 8 and 9) which provide complete sealing protection at the side edges of the bag closure **25**, the panels **11** and **12**, however, remaining unsealed. The resulting product is an effectively sealed bag containing commodities such as stacked cookies, or the like.



Closures made in accordance with the invention may be easily opened by merely grasping the exposed rip cord **23** in the aperture **26** of the bag closure **25**; then pulling the rip cord upwardly and away from the bag, tearing through and separating the opposed halves of the bag closure along its fold line **24**. Immediate access to the bag contents is thus provided.

As a feature of the invention, the bag may be easily and effectively reclosed, albeit not hermetically, by collapsing the top of the bag and folding the bag closure; when thus folded or bent, it will remain in such condition. In this manner, the bag may be opened and reclosed, as required, thus preserving the freshness of the packaged commodity for a substantial period after the bag closure seal has been broken.

A modification of the above described method of forming and applying the bag closure tag of the invention to a filled plastic bag is shown in the schematic flow sheet of FIG. 2 and illustrated by FIGS. 4 and 5. According to the modified method, the prepared foil tape is severed into individual bag tags prior to application to the mouth end of the bag. Filling of the bag is accomplished similarly to the first described method. The pleats **15** are tucked in at the sides and a preformed bag tag of appropriate width is applied to the mouth, folded over and heat sealed under pressure to the front and back panels of the bag. This method, however, is more practical for use in a small scale operation in which automatic machinery is not available. It will be apparent that the first described method lends itself more effectively to loading, closing and sealing with automatic apparatus.

Another modification is shown in FIG. 9 wherein a non-thermoplastic liner or alinement sheet such as a rectangular paper strip **27**, is interposed and partially inserted into the mouth end of the bag so that the upper end of the said strip extends a predetermined distance above the lip of the mouth. The liner thus serves the dual purpose of aligning the fold line of the closure **25** in a predetermined space relation to the mouth, and safeguards the sealing of the bag mouth. In this fashion, application of heat and pressure to the outer surface of the closure **25**, not only prevents the heat sealing of the mouth end, but also minimizes the possibiliy of sealing that portion of the closure between the rip cord and the mouth **14**, thereby effecting opening by the rip cord.

A still further modification within the scope of this invention is contemplated wherein a bag may be formed according to FIG. 10 with a non-thermoplastic band or coating **28** located on the inside of the mouth end of a bag formed from material which is normally heat-sealable in the temperature range of the closure material. Such coating may comprise any relatively infusible material which would not be fused within the heat sealing temperature range of the bag material. If, for example, the normal heat sealing temperature of a cellophane bag is 220° F., then coating **28** would comprise a material which normally would not fuse under 250° F.

FIGS. 11 and 12 illustrate various modifications of how this might be accomplished by providing a coating of finite thickness in any desirable arrangement, such as a pattern forming a series of diagonal stripes **30** (FIG. 11) or a multiplicity of dots **31** (FIG. 12).

In the modification shown in FIG. 13, instead of a rip cord, the laminated closure device **25** of the invention is perforated after assembly along a line **32** preferably disposed slightly below the mouth edge although the perforated line **32** may be disposed in closely spaced relation to and above the said mouth if so desired. Preferably the perforations are made immediately after heat sealing of the package in order to maintain the package seal. Opening of the sealed bag is accomplished by tearing along the perforated line, thereby removing the upper

portion 34 of the closure 25 and the upper margin 35 of the mouth portion 14, and exposing the contents of the bag. The retained portion 36 of the closure 25 remains flush with the mouth section 14 along the line 32.

It is to be understood that the present invention also embraces the concept of a bag closure in which, upon unsealing of the closure, at least a portion of the bag closure is retained on the outside of the bag. This retained portion, in addition to allowing the mouth of the bag to be reclosed by folding, also acts as a reinforcing member for the mouth of the bag, thereby minimizing the incidence of bag tearing.

It will be understood by those skilled in the art that numerous variations in the above described methods involving substitutions of substantial equivalents for the methods described are intended to be comprehended within the spirit of the present invention and that the invention is capable of extended application and is not confined to the precise constructions illustrated nor to the order in which the steps have been described and, therefore, such changes and modifications may be made therein as do not affect the spirit and scope of the invention.

What is claimed is:

1. A closure for sealing the flattened mouth portion of a bag, said closure comprising a rectangular sheet folded flatly along a longitudinal crease line to insertably receive said mouth portion, said closure sheet having a margin overlapping each longitudinal end of said flattened mouth portion, coating means on the inwardly facing side of said closure sealably securing said closure to said mouth portion and the overlapping margins to one another, whereby sealing of said bag is effected by said closure without sealing the motuh portions to each other, unsealing means extending longitudinally across said closure for unsealing said mouth portion, said unsealing means comprising an opening thread secured to said sheet adjacent said crease line, means for facilitating the manual



grasping of said opening thread, and an insert in the mouth portion of said bag having a portion extending outside said bag, thereby to aline said opening thread a predetermined distance from said mouth portion and to prevent sealing of said closure to itself along the area immediately adjacent said opening thread and between said overlapping margins.

2. A closure according to claim 1, said unsealing means being stitched to said closure sheet along the crease line thereof.

3. A closure according to claim 1, said rectangular sheet comprising metal foil whereby the closure upon rupturing may be folded to reclose the bag and maintain the closure.

4. A closure according to claim 1, said rectangular sheet comprising aluminum foil.

5. A closure according to claim 1, said coating means on the inwardly facing side of said closure comprising a thermoplastic substance having a fusion point lower than that of the bag material.


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