United States Patent [19]

Styers

[11] **3,784,087**

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[54] **TAMPERPROOF, RECLOSEABLE PACKAGE AND CLOSURE THEREFOR**

[75] Inventor: **Henry H. Styers**, Chicago, Ill.

[73] Assignee: **Kloz-Seal Products Co., Inc.**, Chicago, Ill.

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[52] **U.S. Cl.** **229/62**, 150/3, 229/66

[51] **Int. Cl.** **B65d 33/30**

[58] **Field of Search** 229/62, 66; 150/3

[56] **References Cited**

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Primary Examiner—William T. Dixson, Jr.
Assistant Examiner—Stephen P. Garbe
Attorney—Gildo E. Fato

[57] **ABSTRACT**

A container having a tamperproof, reclosable closure, the container being of the bag or carton type and having an opening formed by opposite front and rear walls, the closure comprising a flat strip, a portion of which is folded upon itself to form an envelope for a deformable wire. The closure is formed from a paper strip heat-sealable on one side only so that when the heat-sealable side is folded in face-to-face relationship over a portion of the width of the strip to form an envelope for the deformable wire sealed therein, there results a segment along the length of the strip which is heat-sealable and an adjacent segment, containing the wire, which is not heat-sealable. The closure is attached to the flattened opening of a bag by heat-sealing it to one side and folding the ends thereof to the other side of the bag and sealing thereto. Accordingly, when attached and sealed to a bag, the envelope portion of the closure, containing the deformable wire, will not seal thereto so that the end tab portions of the enclosed wire can be unfolded from the bag permitting the bag to be opened. The bag can then be reclosed by refolding the enclosed wire tabs. Prior to the initial opening, the heat-sealed segment must be ruptured so that the closure provides an indication that the container has been opened.

5 Claims, 9 Drawing Figures

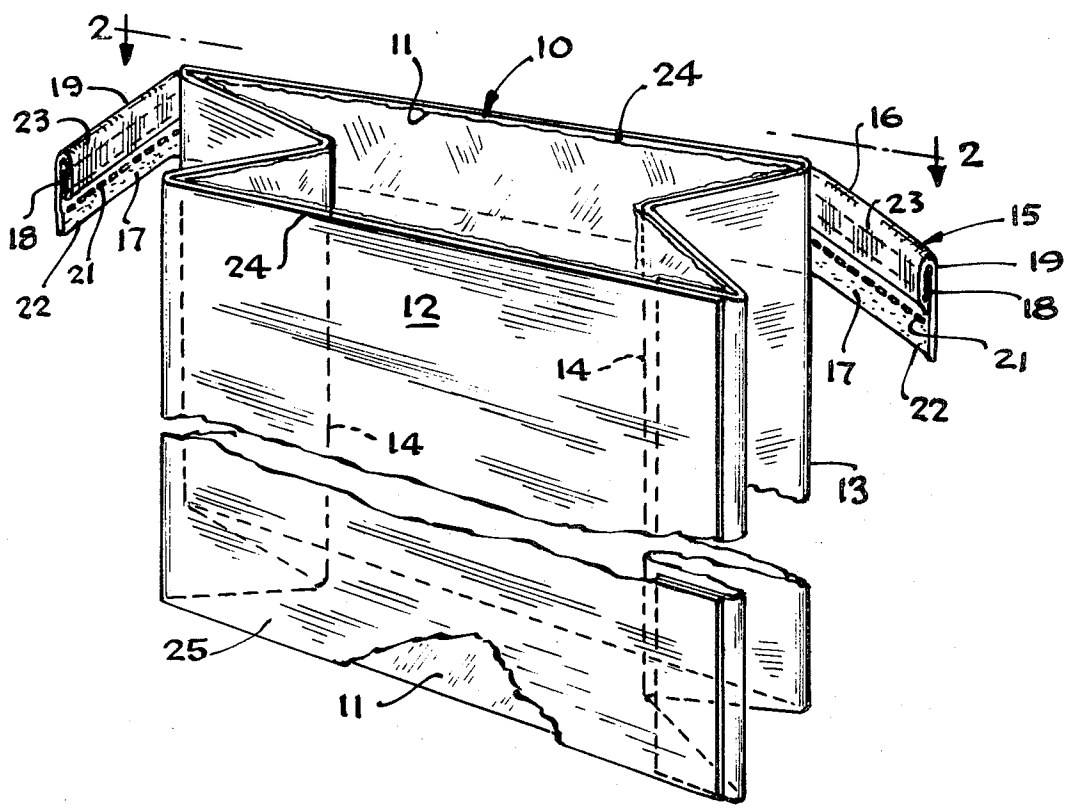


FIG. 1

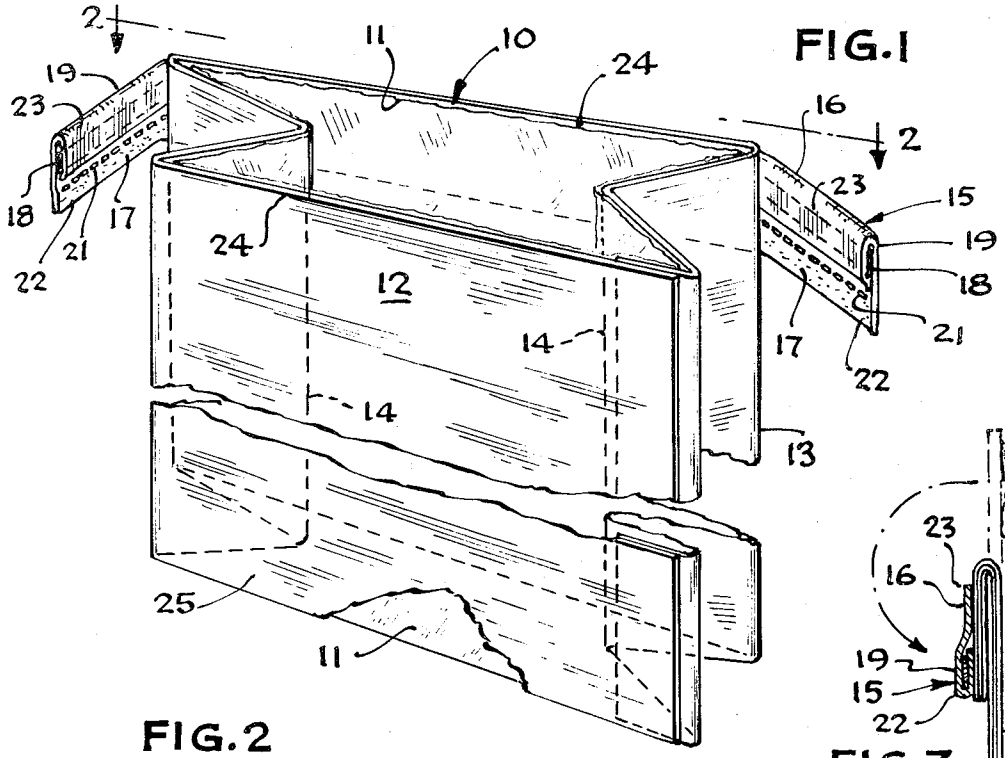


FIG. 2

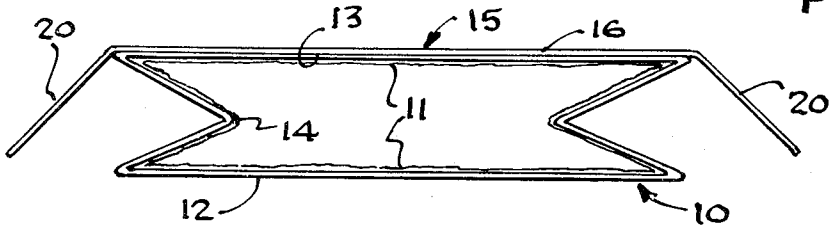


FIG. 3

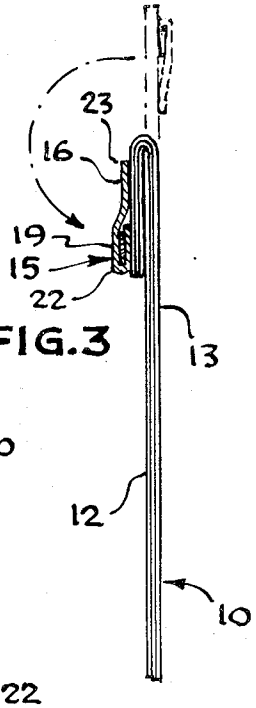


FIG. 4

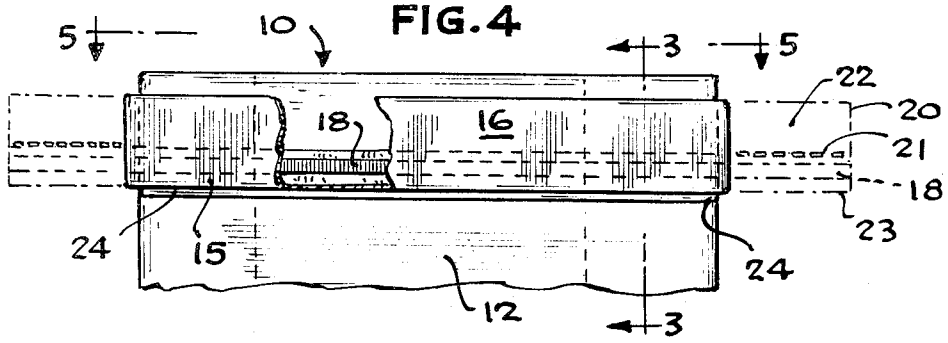


FIG. 5

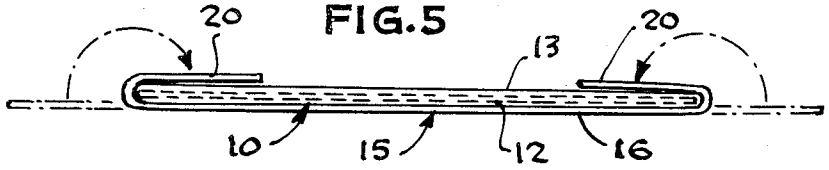


FIG.6

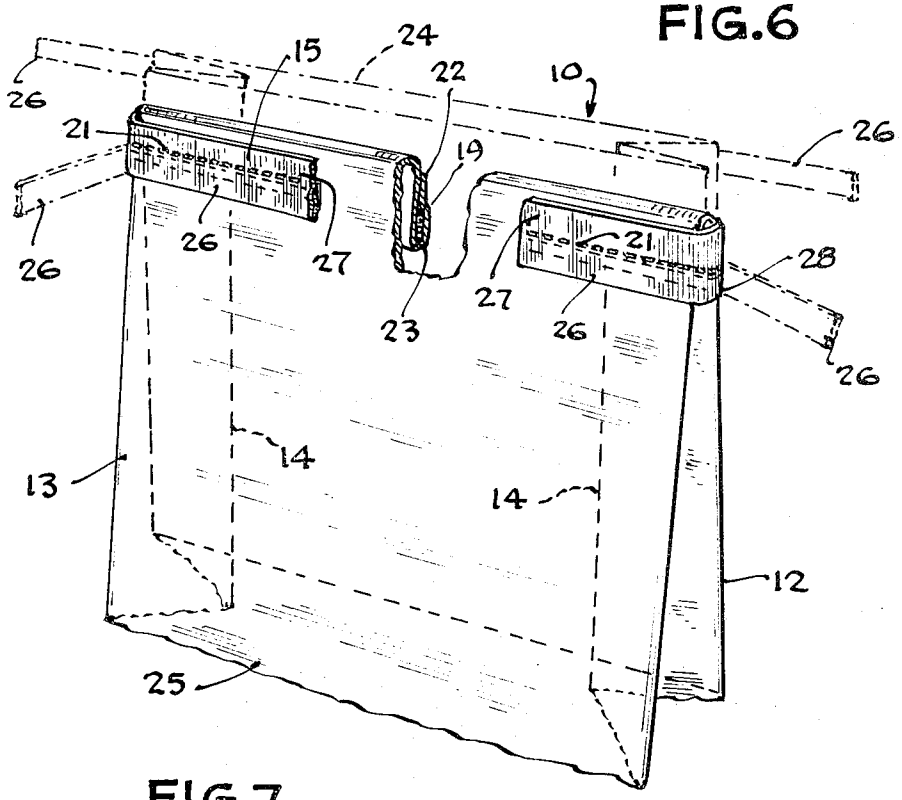
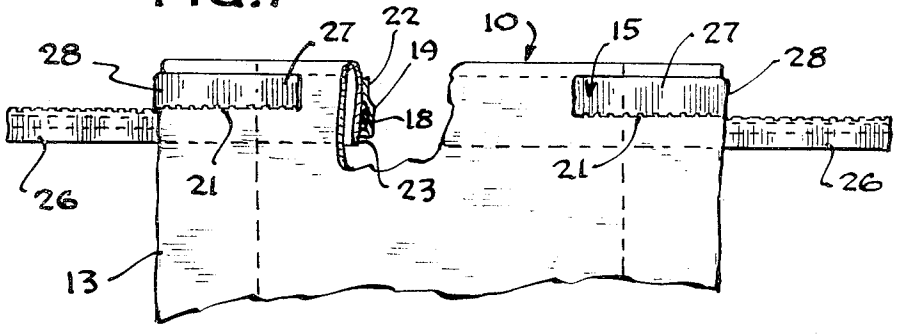


FIG.7



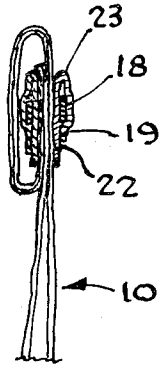


FIG.8

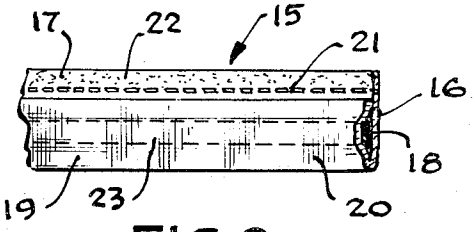


FIG.9

TAMPERPROOF, RECLOSEABLE PACKAGE AND CLOSURE THEREFOR

BACKGROUND OF THE INVENTION

In the packaging of products such as cookies, sugar or coffee, or the like, it is desirable to employ a closure which can be tightly sealed to minimize contamination and prevent tampering. Such products are generally used in relatively small quantities, requiring the package or container to be repeatedly opened and closed. It is therefore also desirable that such a container may be conveniently opened and reclosed while at the same time maintaining product freshness. One type of closure presently used is formed by folding the opening of the bag or container upon itself and sealing the folded portion to the side wall of the bag by means of adhesive. Such closures must be destroyed to open the container and hence, while tamperproof, they cannot affectively be reclosed to protect the contents of the container from contact with air or moisture. Furthermore, there is the possibility that adhesive may enter the package, which is undesirable. Another type of package which is commonly used comprises a bag having a deformable metal strip attached adjacent the opening. Such packages are filled, the opening folded over the metal strip or tie is bent to hold the folded bag opening in place. While such closures can be opened and closed easily, they do not provide satisfactory original seals to prevent contamination or tampering during transportation or storage.

SUMMARY OF THE INVENTION

The closure of the present invention provides a container which can be originally sealed against contamination or tampering and can be easily opened and reclosed after breaking of the seal while at the same time maintaining product freshness. Briefly, the closure of the present invention comprises a strip of paper, foil or other suitable material, of greater width than the container to which it is to be attached and having a deformable wire positioned therein in a portion of the strip which is folded upon itself to form a pocket or envelope for the wire. The closure strip includes a heat-sealable coating or film, on one side only which enables the formation of the pocket or envelope for the wire and which results in a closure strip having on one side thereof a heat-sealable segment across its length and an adjacent segment which is not heat-sealable and within which is contained the deformable wire. Accordingly, when attached to a bag and sealed thereto, the portion or segment containing the wire will not seal thereto whereas the heat-sealable segment will provide a tight original seal which must be broken to open the package. The closure is attached by heat-sealing the sealable segment to one wall of a flattened bag opening, folding the end portions or tabs around to the opposite wall of the bag and sealing them thereto. The bag is opened by unfolding the tab portions of the wire, which as previously described, are not sealed to the bag, and breaking the sealed segment along the edges of the bag. The bag can be reclosed by refolding the enclosed wire around the bag.

DRAWINGS

FIG. 1 is a perspective view, partially in section, of a container of the present invention, with a closure attached thereto and illustrating the container in the open position prior to sealing the container opening.

FIG. 2 is a top view of a container with the closure attached thereto, taken along the line 2—2 of FIG. 1.

FIG. 3 is a side view in cross-section of a container with a closure attached thereto.

FIG. 4 is a front view of a top of a container with the closure strip attached thereto and folded over, illustrating the steps in forming the container closure.

FIG. 5 is a top view of the container of FIG. 4, taken along line 5—5 of FIG. 4.

FIG. 6 is a perspective view, partially in section of a container with the top thereof sealed in accordance with the present invention and the bottom for filling of the container, and illustrating the opened closure in phanthom lines.

FIG. 7 is a rear view of a container, partially in section, showing the tab portions of the closure separated therefrom prior to opening the container.

FIG. 8 is a side view in cross-section illustrating the top of a sealed container with two-folds.

FIG. 9 is a partial plan view of a closure strip.

DETAILED DESCRIPTION

The invention will be described in terms of a lined paper bag sealed with the closure as hereinafter described, the top of the bag being folded over once before sealing, the bottom of the bag being open for subsequent sealing after filling of the bag. The closure, however, may be applied to various types of containers in various manners. In accordance with the invention, there is provided a closure strip having a flat deformable wire positioned therein in a portion of the strip which is folded upon itself. The strip of paper from which the closure is formed, being heat-sealable on one side only, will thereby produce a closure strip having a continuous heat-sealable segment across its length and another continuous segment which is not heat sealable and within which is positioned the deformable wire. When attached to a bag and sealed thereto, the portion of the closure within which is the deformable wire will therefore not seal to the bag so that together with appropriate perforations or scoring, the enclosed wire portion can be detached from the bag, permitting the bag to be opened for removal of the contents or a portion of the contents. The bag can then be reclosed by refolding the enclosed wire around the bag. A typical bag is illustrated in the drawings and is shown in various stages of being sealed, opened and reclosed. The bag **10** may be formed of paper or other sheet material and may have an inner liner **11**, such as of plastic, to act as a moisture barrier. The bag **10** includes a front wall **12** and a back rear wall **13** and may be pleated about fold lines **14** to permit expansion of the bag **10** when filled.

The closure strip **15** is shown separately in FIG. **9** and comprises a strip of paper **16** coated on one side with a theremosplastic material **17**, such as polyethylene, so that it is heat-sealable on that side. The strip of paper **16** is folded upon itself and heat-sealed in a face-to-face relationship about a flat strip of wire **18** to thereby form an envelope **19** for the wire **18**. The strip of wire **18**, which may be round or have other cross-sectional configurations rather than flat, is manually deformable and

should retain its deformed shape. This permits the wire **18** to be folded about the upper portion of the bag **10** for sealing purposes and subsequently manually unfolded and folded for opening and reclosing of the bag **10.** The wire **18** may be drawn from a supply roll and positioned on the flat strip of paper **16** on the side coated with theremoplastic material at a point intermediate one edge. The paper **16** is then folded over and heat-sealed to itself to form the envelope **19** containing the wire **18.** The strip of paper **16** containing the wire **18** is then cut into lengths greater than the width of the bag or container to which it is to be attached, thereby providing end portions **20** which can be folded about the bag **10** for sealing purposes. Preferably, the end portions **20** of the closure strip **15** are perforated or scored **21** adjacent the enclosed wire **18** to provide a weakened line to facilitate opening of the bag **10** as will hereinafter be explained. Since the strip of paper **16** is coated only on one side with a thermosplastic, heat sealable material **17,** the face of the other side of the closure strip and the face of the folded portion will comprise the closure strip material, which in addition to paper can be plastic, metallic, foil, or other material which is not heat-sealable. Accordingly, since the strip **16** is folded upon itself to form the envelope **19** for the wire **18,** there is formed a closure strip **15** having on one side a continuous, heat-sealable segment **22** across the length thereof and an adjacent paper segment **23** which is uncoated and therefore not heat-sealable, while the face of the other side comprises the closure strip material. There is thereby formed a closure strip **15,** a portion of the width thereof across the entire length being heat-sealable. While the thermoplastic material **17** may be applied in discontinuous fashion to produce spaced apart welds upon the application of heat, a continuous application is preferred and will produce a stronger, more impervious bond.

Attachment of the closure strip **15** and sealing of the bag **10** is illustrated in FIGS. **1 – 5.** The closure strip **15** is positioned at the top end **24** of a flattened bag blank **10** having a front wall **12** and rear wall **13** folded flat about fold lines **14** on either side of the bag and having open top **24** and bottom **25** ends. As illustrated, the bag **10** has an internal liner **11** and hence is particularly suited for the packaging of cookies and the like where it is desirable to maintain product freshness prior to and after the bag **10** has been opened. The closure strip **15** is positioned against the rear wall **13** with the segment **23** facing upwardly adjacent to the edge of the open end **24** of the bag **10,** the end portions **20** of the closure strip **15** projecting outwardly from the sides of the bag **10.** The closure strip **15** is next affixed to the bag **10** by heat-sealing methods, as illustrated in phanthom lines in FIG. **3.** While the end portions or tabs **20** may now be folded and sealed to the front wall **12** of the bag **10,** to provide more effective sealing, the top end **24** of the bag **10** to which is attached the closure strip **15** may be folded over one or more times, in widths substantially the same as the width of the closure strip **15,** as best illustrated in FIGS. **3** and **8.** Generally, a single fold is sufficient to minimize the ingress of air and moisture and thereby maintain product freshness. As best illustrated in FIGS. **3, 4** and **5,** the end **24** of the bag **10** to which is affixed the closure strip **15** is folded over once, in a width substantially the same as the width of the closure strip **15** and in a direction so that in the folded portion, the bag wall **12** is in face-to-face relationship and the closure strip **15** is outside the fold. The closure strip **15** is now positioned with the segment **23** facing downwardly as illustrated in FIGS. **3** and **4** with the end tabs **20** projecting outwardly as illustrated in phanthom lines in FIGS. **4** and **5.** The end tabs **20** are then folded tightly against the back wall **13** of the bag **10** and the heat-sealable segment **22** is sealed thereto by the application of heat. The segment **22,** being sealed to both the front **12** and back **13** walls of the bag **10** provides a tight seal for the end **24** of the bag **10.** The adjacent segment **23** or envelope **19** containing the deformable wire **18,** not being heat-sealable, is not sealed to the bag **10** but instead is held in place by the deformable wire **18.**

Accordingly, the end portion or tab **20** of the envelope **19** can be released as subsequently described, to open and reclose the bag **10.** FIG. **6** illustrates a bag **10** with the top end **24** sealed with a closure strip **15** in accordance with the present invention. The bottom end **25** of the bag **10** is shown open for subsequent filling of the bag **10** with the desired contents (not shown), such as cookies, etc.

Opening and reclosing of the bag **10** is best illustrated with reference to FIGS. **6** and **7.** To open the closure **15** and thence the bag **10,** the tab **26** is gripped with the fingers and pulled whereupon it will separate from the end portion **20** along the perforations **21** and can then be folded outwardly as illustrated in FIG. **7.** The tab **26** comprises the end portion of the segment **23** or envelope **19** containing the deformable wire **18.** As previously described, the segment **23** is not heat-sealable so that the tab **26** is not sealed to the bag wall **13** and therefore is easily pulled therefrom. The tab **27,** which comprises the end portion of the segment **22,** being heat-sealed to the bag wall **13** remains attached thereto when the tab **26** containing the wire **18** is unfolded. After unfolding the tab **26,** the tab **27** is torn or ruptured along the edge **28** of the bag **10** to permit unfolding and opening of the end **24** of the bag **10** as illustrated in phanthom lines in FIG. **6.** After removal of the desired amount of the contents of the bag **10,** such as cookies, the bag **10** can be reclosed by folding the end **24** of the bag **10** upon itself as illustrated in FIG. **3** and then folding the tabs **26** containing the wire **18** around the edges of the bag **10.** The deformable wire **18** will retain the top end **24** of the bag **10** in a folded and closed position and minimize the entrance of air into the bag **10** so that product freshness can be maintained. As is readily apparent, the closure of the present invention is tamperproof and can be easily and repeatedly opened and closed while at the same time maintaining the freshness of the product within the bag.

What is claimed is:

1. A container having a tamperproof, reclosable closure, the container opening being made of sheet material and having opposite front and rear walls with the upper portions defining an opening and lying substantially against each other when in the closed position, the closure comprising a strip of material having a thermoplastic, heat-sealable material on one side thereof, a portion of the width of the strip being folded upon itself and heat-sealed in a face-to-face relationship about a deformable metal strip to form an envelope for said metal strip and to thereby provide a closure strip, one side thereof including a first segment along the length thereof having a thermoplastic, heat-sealable material thereon and an adjacent segment along the length

thereof of said strip material, the face of the other side of said closure strip comprising said closure strip material, the length of the closure strip being greater than the width of the container opening to provide end portions which project from the sides of the container opening, said closure strip being affixed to said container opening by heat-sealing said first segment of the closure strip to one wall of the container opening, the end portions of said closure strip being folded around said container opening, said first segment being heat-sealed to said other wall to thereby seal the container opening, Said end portions of the closure strip including a weakened line adjacent the envelope formed about the deformable metal strip to facilitate detachment and refolding of the envelope and enclosed metal strip for opening and reclosing the container.

2. The container of claim **1** wherein said container is of the bag type formed of sheet material and including a front wall and rear wall, pleated about fold lines on either side thereof to permit expansion of the bag when filled.

3. The bag of claim **2** including an inner, plastic liner to serve as a moisture barrier.

4. The container of claim **1** wherein the deformable wire comprises a flat wire strip, co-extensive with the length of the closure strip.

5. The container of claim **1** therein the walls of the container opening are folded over at least once before the first segment of the end portions of the closure strip is sealed to said other wall to seal the container.

* * * * *