Feb. 11, 1969 C. E. PALMER 3,426,936

TEAR STRIP OPENER FOR STEEL FOIL PACKAGES

Filed July 29, 1966

Fig.1.

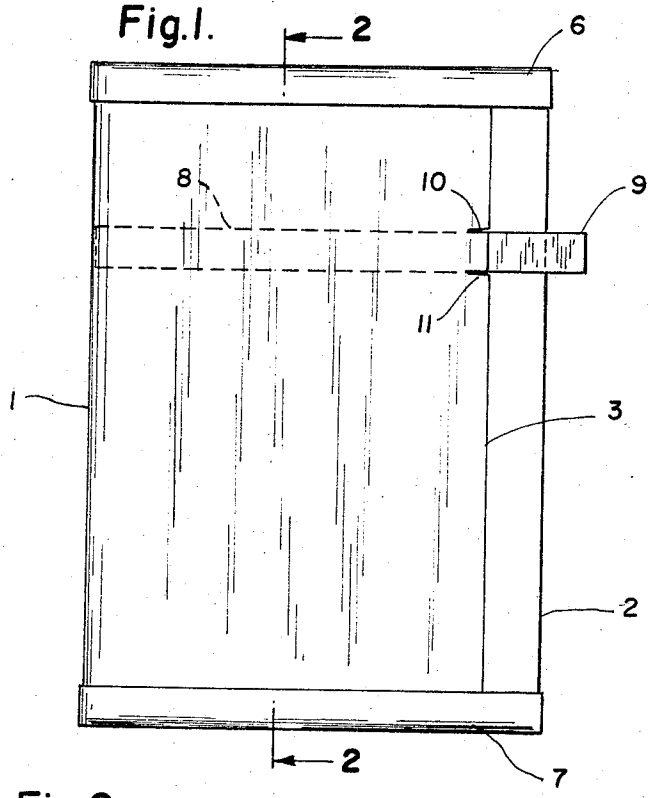


Fig.2.

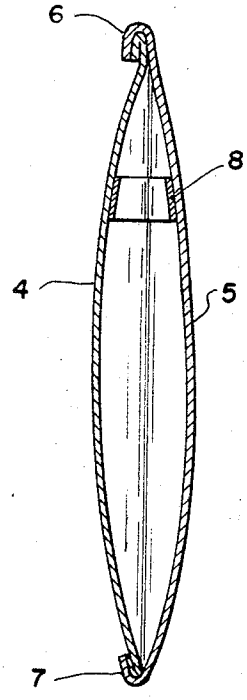


Fig.3.

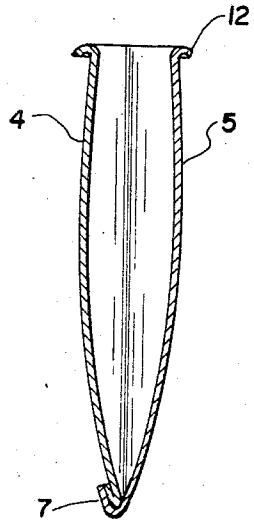
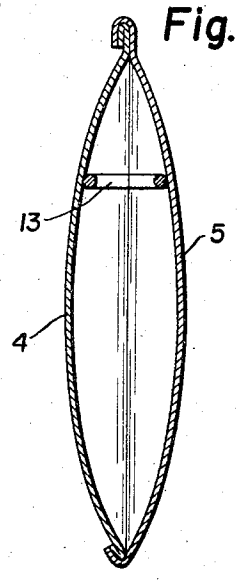


Fig.4.



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TEAR STRIP OPENER FOR STEEL FOIL PACKAGES

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Int. Cl. B65d 17/20, 33/30, 5/70

ABSTRACT OF THE DISCLOSURE

In combination with a steel foil package means in the form of a tear strip is provided for opening the package. The opening means has the characteristic of causing the edges which are formed on the package as it is opened to roll over.

This invention relates generally to packaging wherein steel foil is used as the package-forming material, and more particularly to tear strips for opening such packages.

The use of steel foil as a packaging material has been suggested. It is conceived that steel foil either uncoated or coated with organic or inorganic materials or steel foil laminated with paperboard or the like can be advantageously employed in the packaging art. Such steel foil containers or packages have advantages over other types of metal foil containers because of the high tensile strength and high resistance to abrasion of steel foil as compared to other types of metal foil.

Steel foil is characterized by being extremely sharp on any cut or free edge and thus opening of a package constructed of steel foil is hazardous. I have discovered that the characteristic sharp edge of steel foil can be virtually eliminated and an effective means provided for opening steel foil packages on a predetermined line thus rendering steel foil more acceptable as a packaging material if the package is opened by a tear strip as will hereinafter be more fully described.

Thus, I have as an object of my invention to provide an effective means for tearing open steel foil packages.

Another object of my invention is to provide an effective means for tearing steel foil on a predetermined line.

Still a further object of my invention is to provide tear strips for steel foil packages which preclude the formation of sharp edges on the package upon opening.

I have found that steel foil, especially that of a gauge less than about .002 inch, has relatively low tear resistant qualities so that when used as a packaging material, the package may be easily opened but yet the foil is strong enough to produce a package of relatively high strength.

I have also found, however, that the formation of sharp edges on any cut or free edge of steel foil although characteristic of steel foil generally, is especially prevalent with steel foil in gauges of .002 inch or less. Therefore, my invention of incorporating a tear strip in a steel foil package in a manner so as to overcome the problem of sharp edge formation upon opening of the package has its greatest applicability to steel foil of the latter range of thicknesses. Additionally, the steel foil which generally will be used in packaging will be "full hard" steel foil, that is, steel foil which has not been annealed after having been worked to gauge.

The use of a tear strip of the type which I provide for opening steel foil packages is effective in preventing the formation of sharp edges on the opened edge of the package foil because the tear strip causes the edge which is formed as the package is torn open to roll over to the point where any danger of cutting by the edge of the foil is greatly reduced as will now be described with reference to the accompanying drawing illustrating embodiments of my invention presently preferred by me.

FIGURE 1 is a front view of a closed package incorporating a tear strip.

FIGURE 2 is a cross-section of the package through line 2—2 of FIGURE 1 with the thickness of the steel foil greatly enlarged for ease of illustration.

FIGURE 3 is an end view of a vertical cross-section of the package after it has been fully opened also with the thickness of the steel foil enlarged.

FIGURE 4 is a cross-section of a package like that of FIGURE 1, illustrating a modified form of tear strip.

FIGURE 1 illustrates my invention as applied to an envelope-type package. The package is formed from steel foil sheet of less than .002 inch thickness folded at **1** and **2** so as to provide overlapping portions which are suitably sealed, for example, by means of an adhesive, to form seam **3**, front panel **4**, and back panel **5**. Bottom end portion **7** is then folded over and sealed, after which the package is filled and top end portion **6** then folded over and sealed. Fastened to the steel foil on the inside of the package is tear strip **8** as is best seen in FIGURE 2. In this particular embodiment, the tear strip comprises a strip of steel foil of about ¼ inch width and about .003 inch thickness which is fastened to the steel foil sheet all the way across the sheet by means of an adhesive, weld, or the like before the package is formed with a portion of the strip extending beyond the edge of the sheet. By means of this arrangement, after the package is formed, the tear strip is positioned completely around the package with a portion **9**, which previously extended beyond the sheet, now extending outside the package at the seam so as to provide a pull tab for initiating tearing of the package. The pull tab is suitably covered with a plastic or rubberized compound for ease and safety in gripping the tab when opening the package. The upper overlapping portion of the steel foil is also slit as is shown at **10** and **11** at the point where the tab extends from the seam thus enabling opening of the package to be more easily initiated.

To open the package the tab **8** is grasped and pulled from right to left as shown in FIGURE 1. Significantly, as the tear strip is ripping the package open, it causes the torn edge of the package to roll over so that the very sharp cutting edge of the steel foil which might otherwise be produced is greatly reduced. This feature is best seen in FIGURE 3 wherein reference numeral **12** indicates the rolled-oved edge. The rolled-over edge thus enables the package to be handled without any danger of cutting greatly minimized. Because the thickness of the tear strip is greater than that of the package, the eventuality that the strip will nick itself on the opened edge and thereby become severed before the package is completely opened is for all practical purposes eliminated.

Thus, besides providing an effective means for opening the package on a predetermined line, the tear strip prevents any sharp edges from forming on the package as it is torn open.

My invention has applicability to steel foil packages made from uncoated foil or foil that is coated on one or both sides with organic materials such as micro-crystalline wax, plastics, rubber, lacquers and the like, as well as with inorganic materials such as tin, zinc and the like. Additionally, the strip can be incorporated into a package formed of a steel foil-paper laminate.

Also, the package can be of any shape or size and the tear strip can be positioned in any manner along the paackage. That is, it can extend longitudinally of the package or circumferentially or spirally if the package is tubular, or it can be of a length just sufficient to provide an opening so that the material therein can be dispensed. Score lines can be provided on the package adjacent the strip if it is so desired for ease in opening of the package.

With regard to the tear strip itself, it can be in the

shape of a flat strip as illustrated in FIGURES 1 and 2 or it may consist of wire **13** as shown in FIGURE 4. Although preferably the tear strip is formed of steel foil, it can consist of any material which has the characteristic of being able to roll down the edge of the steel foil package as the package is torn open and which will not break before the package is completely opened.

Thus, it may be seen from the above description that I have provided a means for opening steel foil packages whereby the sharp edge which is otherwise formed upon cutting or tearing of such packages is caused to roll over thereby leaving an edge which enables the opened package to be handled without any danger of cutting occurring from the edge.

I claim:

1. In combination with a steel foil package, means for providing an opening in the package comprising a strip of material having the characteristic of causing the edges which are formed on the package as it is opened to roll over, affixed to the inside of said package, a portion of said strip of material extending to the outside of the package.

2. The combination of claim **1** wherein said strip of material is steel foil.

3. The combination of claim **1** wherein said steel foil is of a thickness of less than about .002 inch.

4. The combination of claim **1** wherein said strip of material consists of wire.

5. The combination of claim **1** wherein the strip of material is steel foil of less than about ¼ inch in width and of a greater thickness than the steel foil of the package.

6. The combination of claim **1** wherein the strip of material is affixed to the package by means of an adhesive.

7. The combination of claim **1** wherein the steel foil comprises full hard steel foil.

8. The combination of claim **1** wherein the steel foil and the strip of moterial comprises full hard steel foil and wherein the foil forming the package is less than about .002 inch thick and the foil forming the strip is more than about .003 inch thick.

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U.S. Cl. X.R.

229—3.5, 51, 62

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,426,936 February 11, 1969

Charles E. Palmer

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 46, "without" should read -- with --; line 65, "paackage" should read -- package --. Column 4, line 11, "moterial" should read -- material --.

Signed and sealed this 24th day of March 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents