

[54] **METHOD AND APPARATUS FOR FORMING SHAPED PACKAGE**

3,091,902 6/1963 Reinhardt et al. .... 53/28  
 3,543,467 12/1970 Leasure ..... 53/28

[75] Inventors: **William C. Leasure, Houston; Luis Garcia, Bellaire, both of Tex.**

*Primary Examiner*—Robert L. Spruill  
*Attorney*—Larson, Taylor & Hinds

[73] Assignee: **Mira-Pak, Inc., Houston, Tex.**

[22] Filed: **Sept. 21, 1971**

[57] **ABSTRACT**

[21] Appl. No.: **182,415**

The invention relates to a method and apparatus for forming packages on form, fill and seal package machinery wherein strip packaging film is shaped into a tube by passing over a former. The former is provided with means for shaping the package with corners so that a package with any desired configuration with side faces is provided. Means may also be incorporated in the former for creasing the tubular shaped packaging film to provide gussets in the side walls. Additional sealing means may be provided beneath the former to reinforce the corners formed by the former.

[52] **U.S. Cl.**..... 53/28, 53/180, 93/82

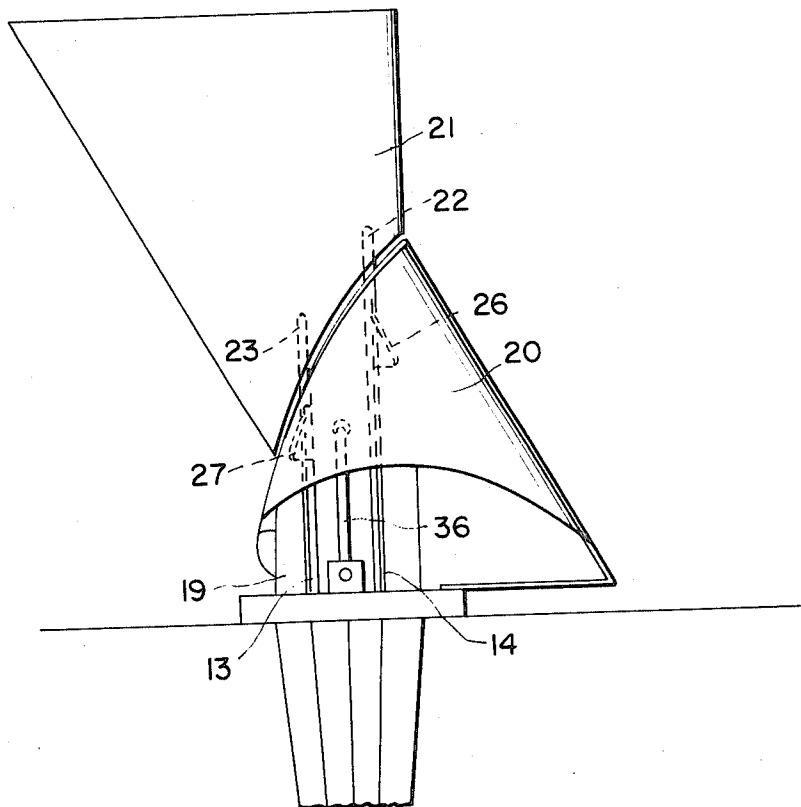
[51] **Int. Cl.**..... B65b 9/08, B65b 43/10

[58] **Field of Search**..... 53/28, 177, 179, 53/180, 182; 93/12 R, 17-20, 82, 84 TW, 94 R, 94 PS; 156/203, 466

[56] **References Cited**  
**UNITED STATES PATENTS**

3,505,779 4/1970 Kopp ..... 53/180  
 2,899,875 8/1959 Leasure ..... 53/180 X

**5 Claims, 10 Drawing Figures**



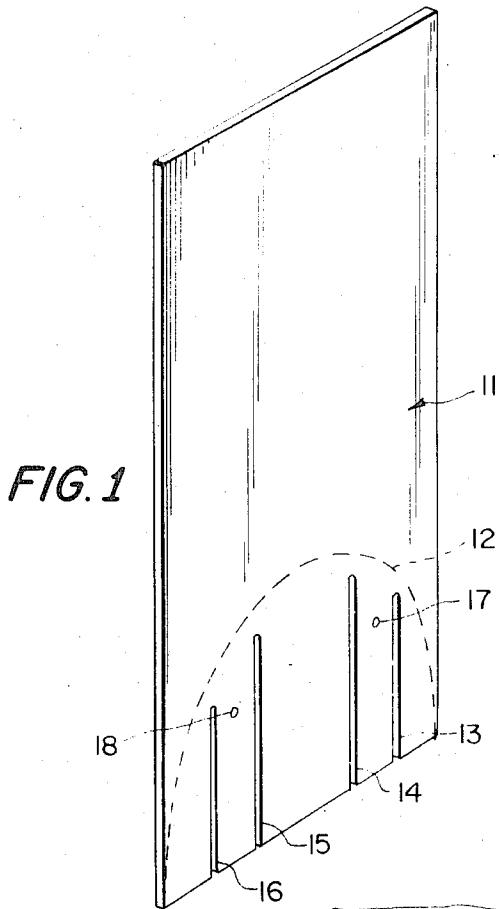


FIG. 1

FIG. 2

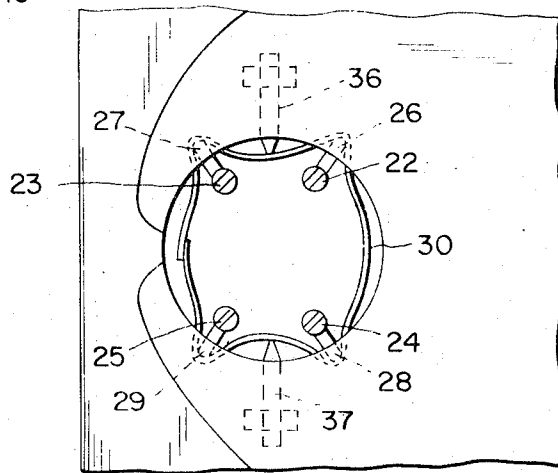
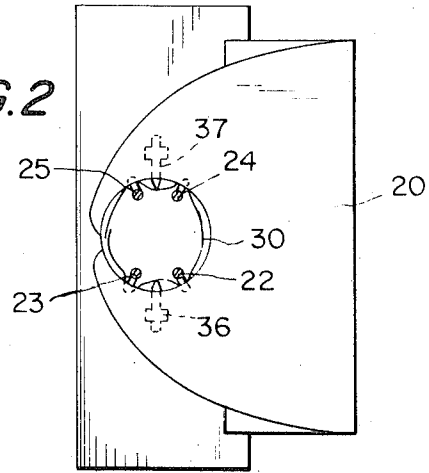


FIG. 3

INVENTORS  
WILLIAM C. LEASURE  
LUIS GARCIA

*Larsoy, Taylor and Hinds*  
ATTORNEYS

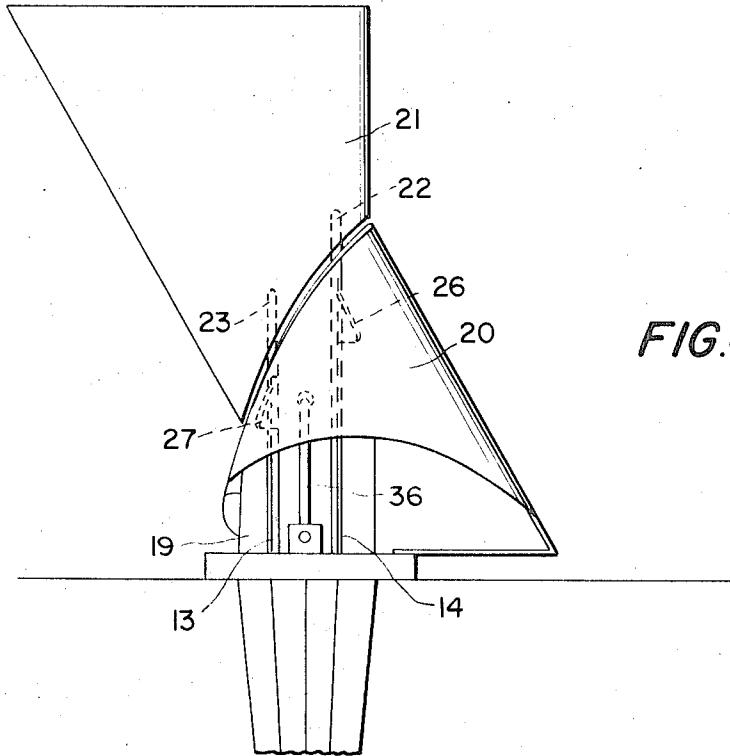


FIG. 4

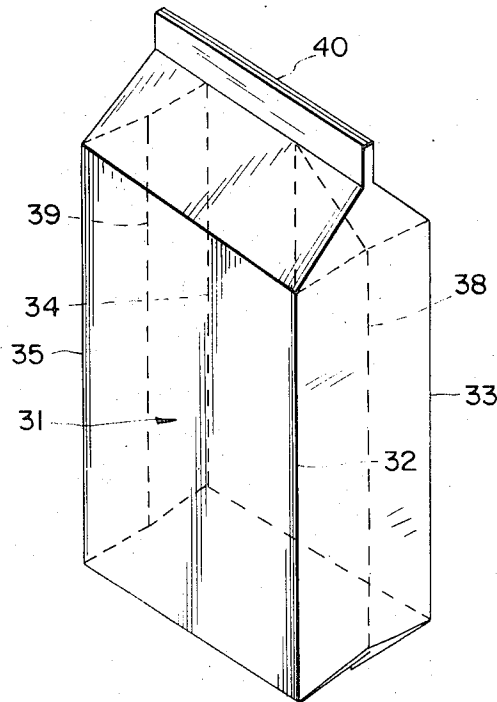
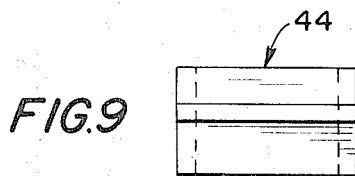
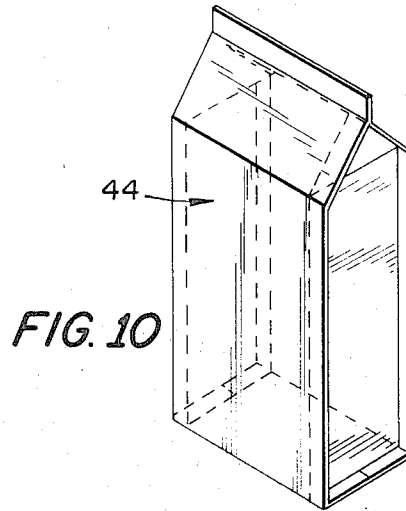
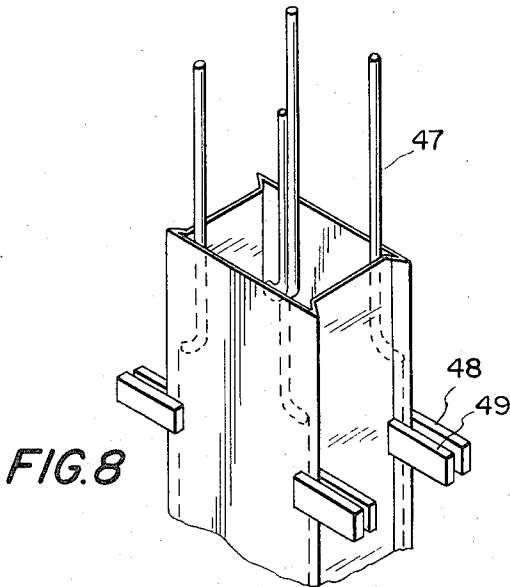
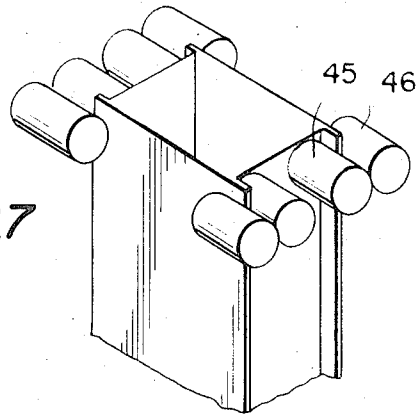
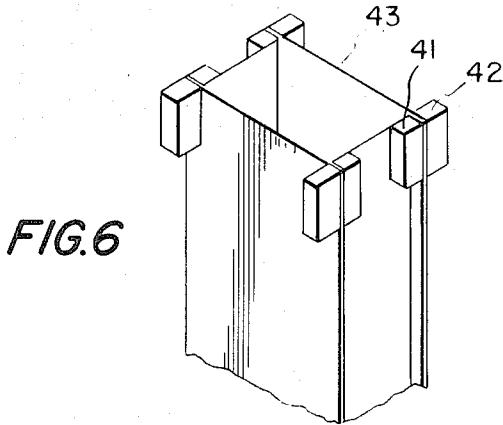


FIG. 5

INVENTORS  
WILLIAM C. LEASURE  
LUIS GARCIA

*Larson, Taylor and Hinds*  
ATTORNEYS



INVENTORS  
WILLIAM C. LEASURE  
LUIS GARCIA

*Larson, Taylor and Hinds*  
ATTORNEYS

# METHOD AND APPARATUS FOR FORMING SHAPED PACKAGE

## BACKGROUND

### 1. Field of the Invention

The invention relates to packaging and more specifically to a method and apparatus for forming a shaped package on form fill and seal packaging equipment by providing means attached to a former which shapes the strip packaging film into a tubular configuration, such means forming corners for the package so that the resulting package has side faces and may, for example, be of a generally rectangular configuration. The former also has creasing means which is adapted to form fold lines on the side faces of the package to provide gussets therein. The corners formed by the specially designed former may be reenforced by sealing elements which seal together portions of the side faces of the package to reinforce the resulting package.

### 2. Description of the Prior Art

In prior U.S. Pat. No. 3,899,875 issued Aug. 18, 1958 there is disclosed a former which is adapted to shape strip packaging film into tubular configuration and for sealing together the over-lapping longitudinal edges of the film so that the film may be formed into pillow type packages.

In later issued U.S. Pats. Nos. 3,543,467; 3,543,368 and 3,543,477 all issued Dec. 1, 1970 and U.S. Pat. No. 3,548,563 issued Dec. 22, 1970 and U.S. Pat. No. 3,552,081 issued Jan. 5, 1971 there are disclosed various methods and apparatuses for forming flat bottom packages on form, fill and seal packaging machinery. In producing flat bottom packages as disclosed in these patents it has been found desirable to further shape the package walls to form a package with more precise configuration. That is to say, by using the methods disclosed in the aforesaid patents a generally rectangular configuration for the bottom wall is provided which tends to cause the semi rigid packaging film to assume a rectangular configuration extending up to the transverse seal. However, it has been found desirable to shape the sidewalls of the package more precisely to produce a package which is more distinctive and has greater stability.

According to the present invention the former is provided with a series of slots in the tubular portion of the former at locations corresponding to corners of the package. Rods having projections on the end thereof are secured to the packaging machine with the projections extending through the slots in the former. Thus, packaging film which would normally pass downwardly through the tubular portion of the former is forced by the projections to pass into the slots and around the projections. In this manner angular fold lines are provided along the side edges of the package. In order to form inwardly extending creases in the packaging film to provide gussets in the sides of the package there are provided holes in the tubular portion of the former and pins extend through these holes to engage the film. In this manner inwardly extending creases are formed in the package to provide gussets.

An object of the invention to provide a packaging apparatus and method for forming packages on form, fill and seal packaging equipment, the packages having shaped sides.

Another object of the present invention is to provide a former for use on form, fill and seal packaging equip-

ment with means in the former for forming fold lines in the packaging film to provide a package with pre-shaped sides.

Another object of the present invention is to provide a method and apparatus for forming a generally rectangular shaped package with gussets on form, fill and seal packaging equipment.

Other objects and many of the attendant advantages of the present inventions will become more readily apparent on consideration of the following detailed specification in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of a plate from which the former according to the present invention is to be shaped,

FIG. 2 is a top plan view of the former with the means for forming fold lines and gussets attached thereto,

FIG. 3 is a bottom plan view of the former according to FIG. 2,

FIG. 4 is a side elevation of a former according to the present invention,

FIG. 5 is a perspective view of a package made according to the present invention,

FIGS. 6 to 8 inclusive are partial perspective views of means for reenforcing the package corners,

FIG. 9 is a bottom plan view of a package made with reenforced corners according to FIGS. 6 to 8 and,

FIG. 10 is a perspective view of a package with reenforced corners.

Referring now more specifically to the drawings wherein like numerals indicate like parts throughout the several views there is shown at 11 in FIG. 1 a metal plate having a fold line 12 shown thereon from which a former is to be shaped. The configuration of the fold line 12 and the shaping of the former is as described in U.S. Pat. No. 2,899,875. Slots such as shown at 13, 14, 15 and 16 are cut in the metal plate for the former as shown and apertures 17 and 18 are also provided in the plate.

The former is bent to provide a tubular portion 19 as shown in FIG. 4 and wings or collar portion 20. The strip packaging film is brought from a roll over the collar portion 20 and inwardly into the tubular portion 19 in the manner fully disclosed and described in U.S. Pat. No. 2,899,875 hereinbefore referred to.

In order to fill the package there is provided a generally tubular member 21 which has the lower edge thereof shaped to conform to the upper opening of the tubular portion 19 of the former. Normally, product is fed through the open upper end of member 21 so that it passes downwardly into the tubular shaped packaging film disposed within the former. Secured to the inner surface of member 21 are rods 22, 23, 24 and 25 (FIGS. 2,3 and 4). The lower end portions of these rods have generally triangular shaped projections thereon such as shown on rod 22 at 26 and on rod 23 at 27 (FIG. 4). The projection 26 is adapted to extend through the slot 14 in the tubular portion of the former and the projection 27 is adapted to extend through the slot 13. The projection 28 on rod 24 extends through slot 15 and the projection 29 on rod 25 extends through slot 16 on the former.

It can be seen in FIGS. 2 and 3 that tubular packaging material such as shown at 30 in passing downwardly inside the tubular portion 19 of the former must pass outwardly through the slots 13 to 16 inclusive and over the projections 26 to 29 inclusive. As the packaging film is

of a semi-rigid material in passing over the projections fold lines will be formed along lines corresponding to the points at which the slots are located. These fold lines correspond to the corners **32, 33, 34** and **35** of a shaped package **31** which is formed by the apparatus disclosed herein.

If desired, crease lines may be provided in the packaging film to locate gussets in the package. This is achieved by means of pins such as shown at **36** and **37** in FIGS. **2, 3** and **4**. These pins are secured to the base of the former as shown in FIG. **4** and are adapted to extend from the outside of the former through the apertures **17** and **18** respectively in the tubular portion **19** of the former. As shown in FIG. **3** the end portions of pins **36** and **37** will form creased lines in the packaging film **30** so as to provide the fold lines **38** and **39** in the shaped package **31** shown in FIG. **5**. These fold lines **38** and **39** are located midway between the corners of the package on opposite sides to provide fold lines for the gussets.

The mechanism for forming the package end seal **40** and the flat bottom may be by any conventional equipment, such as, for example, as referred to in any of the prior patents hereinbefore referred to.

Referring now to FIGS. **6** to **10** there are shown various means for reenforcing the package corners formed by the apparatus disclosed in FIGS. **1** to **4** inclusive. In FIG. **6** there is shown four pairs of heat sealing jaws **41** and **42** which are adapted to be located directly below the former and these heat sealing jaws engage the packaging film **43** at the location of the fold lines for the package corners and heat seal portions of the inner faces of the packaging film together, resulting in a package having reenforced corners such as shown at **44** in FIG. **10**.

In FIG. **7** there are shown pairs of rollers **45** and **46** disposed adjacent the package corner which provide the function of shaping the package walls to produce a package as shown at **44** in FIG. **10** but wherein the walls are not sealed together as in FIG. **6**.

In FIG. **8** there is shown a further alternative embodiment for producing a package according to FIG. **10** wherein tubes such as shown at **47** supply glue to each corner of the package and pressure elements **48** and **49** press portions of the side edges of the packaging film together so that they are firmly glued to reenforce the package corners and produce a reenforced package.

It can be seen that according to the present invention there is provided a method and apparatus for forming packages on form, fill and seal packaging equipment which has accurately formed corners to provide side faces with crease lines for gussets. If desired, the corners of the package may be reenforced to produce a package having greater strength and stability.

Obviously many modifications and variations of the present invention are possible in light of the above teachings.

What is claimed as new and is desired to be secured by Letters Patent is:

**1.** In a method for forming a package including the steps of passing strip packaging material over the inside surface of an externally disposed former to shape the film into a generally tubular configuration, sealing the longitudinal edges of the film together, forming a transverse bottom package seal, filling the package with product and forming a transverse top package seal, the improvement comprising the step of passing the film over sharp edges projecting from the surface of the former whereby portions of the packaging film are forced into contact with the sharp edges thereby forming creases extending longitudinally of the package to form package corners without the presence of an inner mandrel.

**2.** In a method according to claim **1** wherein angular corners are formed on the package by passing the film through slots in the former and over projections extending into the slots.

**3.** In a method according to claim **1** wherein gusset fold lines are formed in the package by projections extending through apertures in the former into contact with the package film.

**4.** In a packaging machine of the form, fill and seal type including a former having a tubular portion and a wing shaped collar portion for shaping strip packaging film into tubular form, the improvement comprising means forming at least one sharp edge associated with said tubular portion of the former for forming at least one crease longitudinally in the packaging film as it is drawn over the former, said last named comprising at least one slot in the tubular portion of the former and at least one guide rod having a projection extending through the slot so that the packaging film passing downwardly through the tubular portion of the former passes outwardly through the slot and over the projection to form an angular corner extending longitudinally in the packaging film.

**5.** In a packaging machine of the form, fill and seal type including a former having a tubular portion and a wing shaped collar portion for shaping strip packaging film into tubular form, the improvement comprising means forming at least one sharp edge associated with said tubular portion of the former for forming at least one crease longitudinally in the packaging film as it is drawn over the former, said last named means comprising at least one projection extending through an aperture in the former into contact with the package film to form a crease for a package gusset.

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