

# United States Patent

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329/5(RT); 156/260, 264, 512; 53/14

[56] **References Cited**  
**UNITED STATES PATENTS**  
3,272,673 9/1966 Focke..... 156/512X

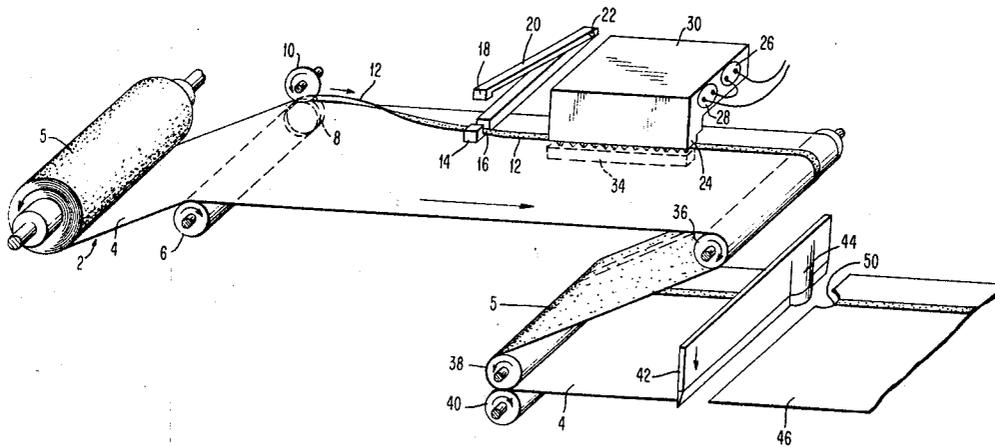
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[54] **METHOD OF FORMING A TEAR STRIP ON A  
PACKAGING SHEET**  
1 Claim, 6 Drawing Figs.

[52] U.S. Cl.....**93/1, 53/14,**  
156/260, 156/264, 229/51

[51] Int. Cl..... **B31d**

**ABSTRACT:** This invention relates to the formation of a tear strip on a packaging sheet having a surface which is heat or pressure sealable. By trimming a narrow strip from the packaging sheet and sealing the trimmed strip to the surface of packaging sheet, a packaging sheet with an affixed tear strip of the same sheet material is produced.



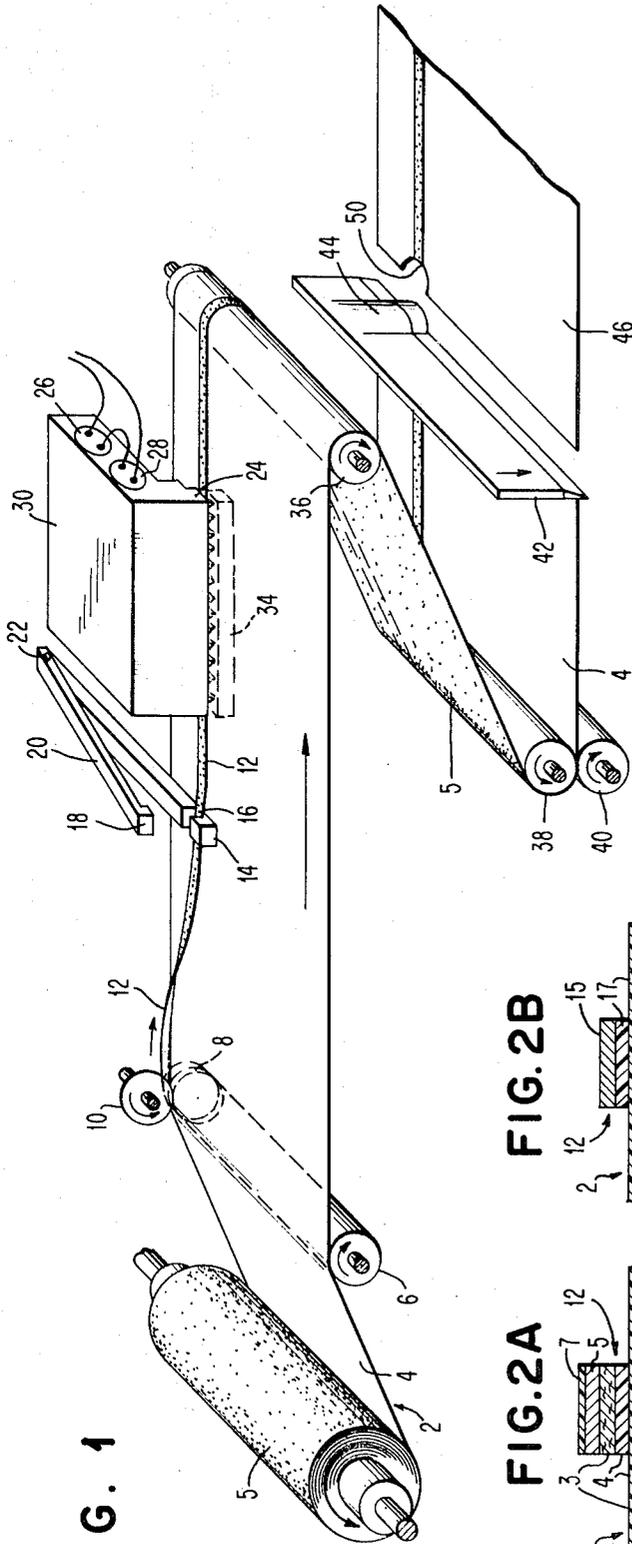


FIG. 1

FIG. 2B



FIG. 2A

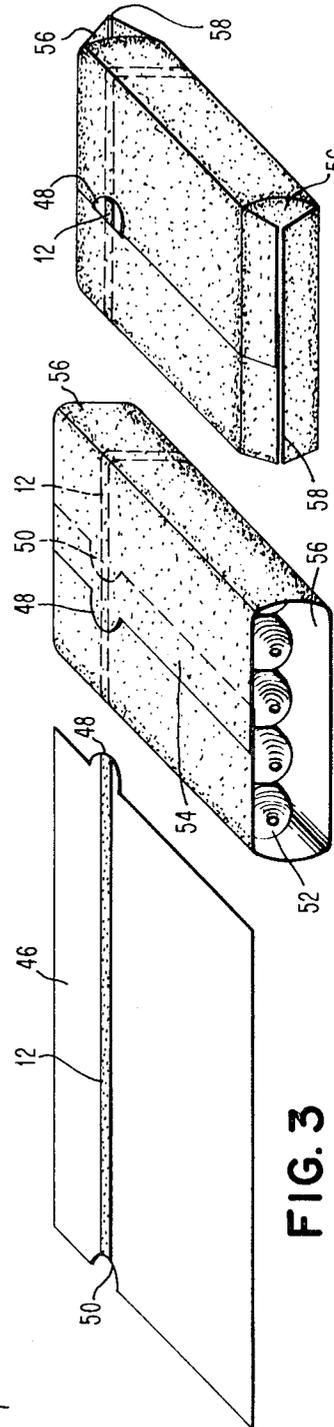
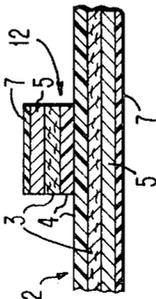


FIG. 5

FIG. 4

FIG. 3

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## METHOD OF FORMING A TEAR STRIP ON A PACKAGING SHEET

### BACKGROUND OF THE INVENTION

This invention relates to the method of continuously cutting a tear strip from a roll of a packaging sheet having a surface which is heat or pressure sealable and affixing the tear strip to the surface of the packaging sheet thereby obviating the use of threads and other materials conventionally applied to packaging sheets as tear strips.

Numerous prior patents teach that pouches or packages can be formed to include a tear strip sealed to the surface of the packaging sheet to facilitate opening the finished package. Illustrative are U.S. Pat. Nos. 2,970,736 granted Feb. 7, 1961, to Baughan, 3,057,539 granted Oct. 9, 1962, and 3,181,438 granted May 4, 1965, both to Leary, which disclose that a pouch material comprising laminations of metal foil, fibrous papery material and a coating of thermoplastic material is suitable for manufacturing a heat-sealable container with leakproof joints. Furthermore, U.S. Pat. No. 2,683,401 granted Jul. 13, 1954 to Smith shows that narrow rip strips can be cut from a wide roll of strip-forming material just prior to applying the narrow strip to a packaging material, thus precluding problems which arise from handling narrow coils of rip strip material. In addition, U.S. Pat. No. 2,475,052 granted Jul. 5, 1949 to Rosen discloses a package with a tear strip formed by perforating along one of the longitudinal edges of the packaging sheet, and then folding the edge of the sheet with the perforated strip under and parallel to the overlying remainder of the packaging sheet. This proposal suffers from the disadvantage that a perforated tear strip is more difficult to pull off, does not tear cleanly and requires more of the packaging sheet for the folded portion.

### SUMMARY OF THE INVENTION

By contrast, the present invention requires only that a flexible packaging sheet having at least one surface which is heat or pressure sealable be cut to form a tear strip of desired width as the sheet is continuously withdrawn from a roll thereof and that the tear strip cut from the sheet be adhered to the heat or pressure sealable surface of the packaging sheet without the use of any extraneous adhesive or other added material.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagrammatic representation showing one method of continuously trimming a tear strip from a roll of packaging sheet, and inverting, positioning and sealing this tear strip onto the packaging sheet as it is longitudinally advanced;

FIG. 2A is a transverse sectional view of a typical metal foil, paper and polyethylene laminate where the polyethylene coating on the tear strip portion has been sealed to the same polyethylene coating of the laminate packaging sheet;

FIG. 2B shows a similar section of a packaging metal foil having a pressure-sensitive coating with a tear strip of the same foil attached thereto;

FIG. 3 shows a segment of packaging sheet with a tear strip of the same sheet affixed on the sheet and a tab cut on one edge of the segment;

FIG. 4 shows in perspective the sheet segment of FIG. 3 wrapped around five cigars with the tear strip inside the partially formed pouch and the tab on the outside of the pouch; and

FIG. 5 shows the pouch of FIG. 4 in the completed form with the opposite ends folded and sealed.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows packaging sheet 2 being drawn from a roll thereof with its sealable surface 4 uppermost and metal foil surface 5 undermost over cutting roller 6 which has a peripheral groove 8 cooperating with rotary cutting blade 10.

Tear strip 12 is thus continuously trimmed from one edge of sheet 2 to an appropriate width, then looped over to invert the strip and bring its sealable surface 4 into contact with the same surface of the remainder of packaging sheet 2. Tear strip 12 is positioned on packaging sheet 2 by guide bar 14 having a rectangular channel 16 milled therein. Strip 12 is held loosely in channel 16 by guide cover 18 that drops into channel 16 and is supported on bar 20 which is arcuately movable on pivot 22.

As packaging sheet 2 is continuously advanced longitudinally with tear strip 12 in an overlying position, sealer bar 24 of sealing unit 30 seals tear strip 12 to packaging sheet 2 which is supported by inverted bristle brush 34 positioned directly under sealer bar 24.

If packaging sheet 2 has a film or coating thereon which is heat sensitive or sealable, heater 26 is provided in conjunction with thermostat 28 to maintain sealer bar 24 at the proper temperature to effect the sealing of tear strip 12 to packaging sheet 2. If packaging sheet 2 has a film or coating thereon of a pressure sensitive material, sealing unit 30 does not require heater 26. Inverted brush 34 is on an adjustable support (not shown) which may be adjusted to provide the desired amount of pressure against sealer bar 24 depending on the heat and/or pressure sensitive character of the film or coating on packaging sheet 2. Other known means, such as a tandem series of rollers, may be used in place of inverted brush 34 to cooperate with sealer bar 24 and apply the desired pressure thereagainst.

It is obvious that two widths of packaging sheet with tear strips of the same packaging sheet may be produced simultaneously by this method by trimming both edges of sheet 2 and employing paired cutting blades 10, guide bars 14 and sealing units 30, and then slitting packaging sheet 2 longitudinally. It is also possible to make a single packaging sheet with two tear strips of the same sheet.

After tear strip 12 is affixed to packaging sheet 2, sheet 2 is guided over idler roller 36 and led between driven roller 38 and friction roller 40 which jointly act to pull packaging sheet 2 from the roll thereof. If desired, driven roller 38 may be linked with a Geneva gear (not shown) which intermittently advances sheet 2 under knife 42 to cut segments 46 from sheet 2. To make tear strip 12 readily available, knife 42 is preferably shaped in the area of portion 44, aligned with tear strip 12, to cut tab 48 which concomitantly results in cutout 50 being formed on the opposite edge of sheet segment 46 as will be seen in FIG. 3.

As known, each sheet segment 46 can be wrapped around one or more articles 52 and sealed at overlap 54 as shown in FIG. 4 wherein articles 52 are illustrated as five cigars. To form a pouch or package, opposite ends 56 of sheet segment 46 are folded in and transversely sealed along edges 58 as shown in FIG. 5. At the same time, tab 48 is folded back over the sealed overlap so that tear strip 12 becomes visible at the point where it is to be pulled to open the sealed package.

The method of this invention is particularly applicable to laminates comprising a metal foil and a film or coating on one surface of the laminate that is pressure or heat sensitive. FIG. 2A shows a laminate cross section of polyethylene film 4, paper 3 and metal foil 5 with protective coating 7; FIG. 2B shows a cross section of metal foil 13 bonded to thermoplastic layer 17. In both FIGS. 2A and 2B, tear strip 12 of the same respective packaging sheet is shown attached to its sheet in the inverted position, i.e., the sealable surface of strip 12 is attached to the same sealable surface of the sheet. This inversion of the tear strip is preferred not only because it facilitates and ensures better adhesion of the tear strip to the packaging sheet but also because in nearly all instances the two surfaces of the packaging sheet are different in color and/or texture so that the inverted tear strip will be more conspicuous against the packaging sheet.

In a specific example of the invention involving the packaging of cigars in the form of five-pack sealed pouches, a rotogravure-printed aluminum foil of 3.5 mil thickness is overcoated with a thin application of lacquer to protect the print to

ensure the resistance of the foil to moisture vapor transmission. The other surface of the foil is laminated to a 25-pound bond paper. This paper has a half mil of polyethylene coating on its other surface which will form the inside surface of the finished pouch. A roll of this packaging sheet is passed through the processing equipment illustrated in FIG. 1 with the metal foil of the laminate facing down. A tear strip of approximately 1/8-inch width is trimmed from a longitudinal edge of the packaging sheet, is continuously inverted so that the polyethylene surface of the tear strip is adjacent to the polyethylene surface of the packaging sheet, is guided into a desired position, and is heat sealed to the packaging sheet.

The resulting packaging sheet with the attached tear strip can then be rolled onto spools for storage or fed directly into a packaging machine in which segments as shown in FIG. 3 are cut and formed into a sealed pouch containing cigars as shown in FIGS. 4 and 5.

The polyethylene coating on the paper-metal foil laminate was selected for this specific example because it is readily heat sealable, does not block with the cellophane overwrapping on the cigars and increases the resistance of the pouch to moist vapor transmission.

In view of the many possible modifications and variations of the invention which will occur to those skilled in the art without departing from the spirit or scope of the invention, only such limitations should be imposed as are indicated by the appended claims.

I claim:

1. The method of continuously forming a contrasting tear strip on an opaque packaging sheet comprising a laminated paper and metal foil with a heat-sealable coating on the paper surface of said packaging sheet which comprises:
  - a. drawing said packaging sheet and cutting therefrom a tear strip of desired width;
  - b. guiding and inverting said tear strip to a desired position on said packaging sheet parallel to an edge thereof in such manner that said sealable coating on said paper surface of said packaging sheet contacts said sealable coating on said paper surface of said tear strip; and
  - c. sealing with heat said tear strip to said packaging sheet by means of the two contacting thicknesses of said sealable coating disposed therebetween.

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