United States Patent

Young

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[54] LIGHT WEIGHT EXPANSIBLE MAILING ENVELOPE

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[52] **U.S. Cl.** .....**229/75**, 229/41 B, 229/68 R, 229/DIG. 3

[51] **Int. Cl.**.....**B65d 11/48**

[58] **Field of Search**.....229/41 R, 41 B, 68, 72, 75, 229/DIG. 3

[56] **References Cited**

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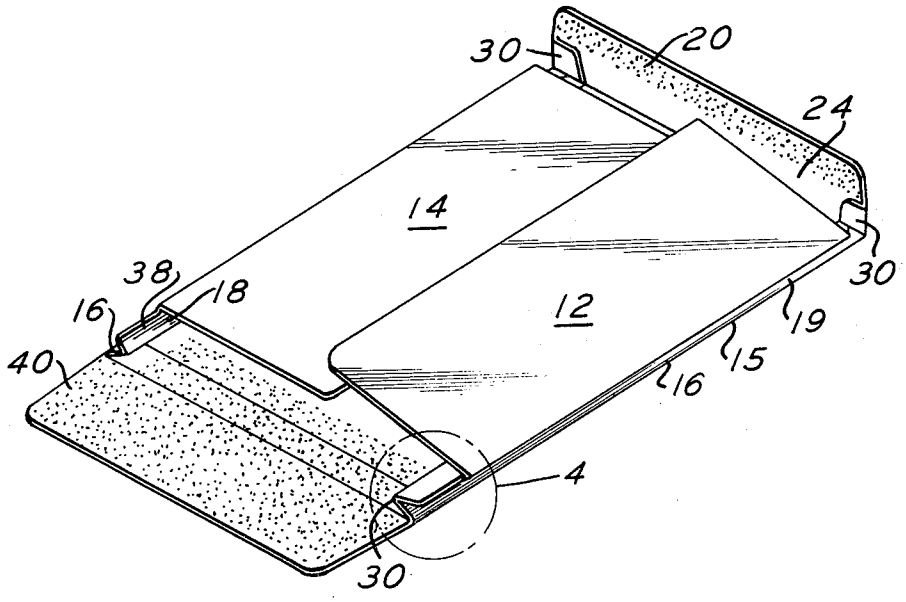
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Assistant Examiner—Michael Y. Mar
Attorney—Stanley Bilker

[57] **ABSTRACT**

A light weight expansible mailing envelope which is fabricated from a single blank of spunbonded olefin sheet stock. All 90° inside corners at the open mouth of the envelope include radiused filets at the intersection of non-coextensive planes which the side gusset sections form with the front and back panels. Corner closure flap extensions are incorporated to increase the number of non-coextensive planes at the open end of the envelope.

2 Claims, 4 Drawing Figures



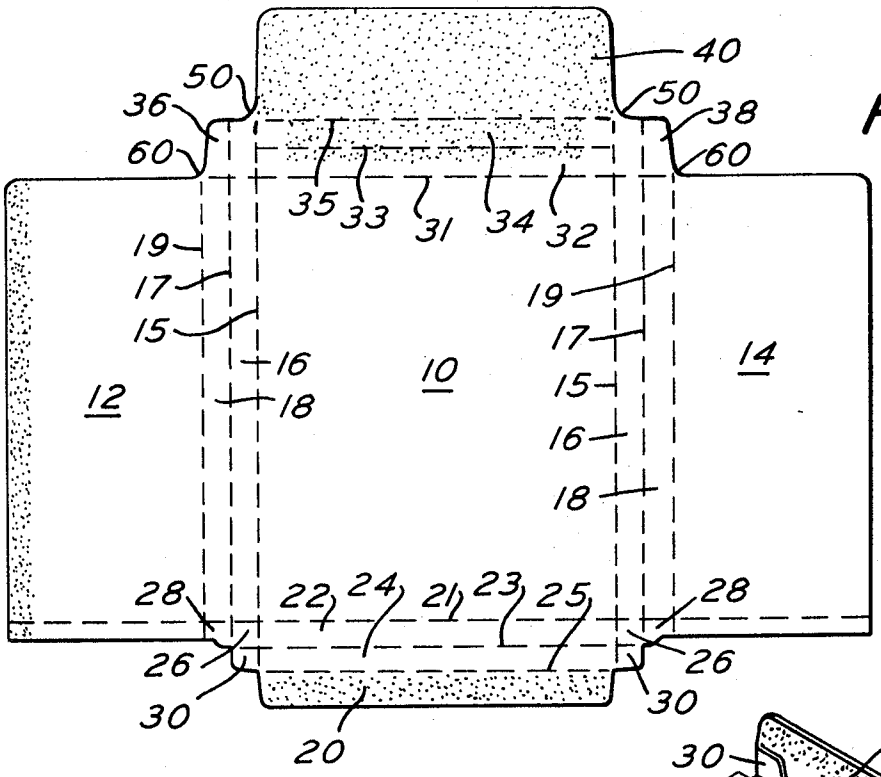


FIG. 1

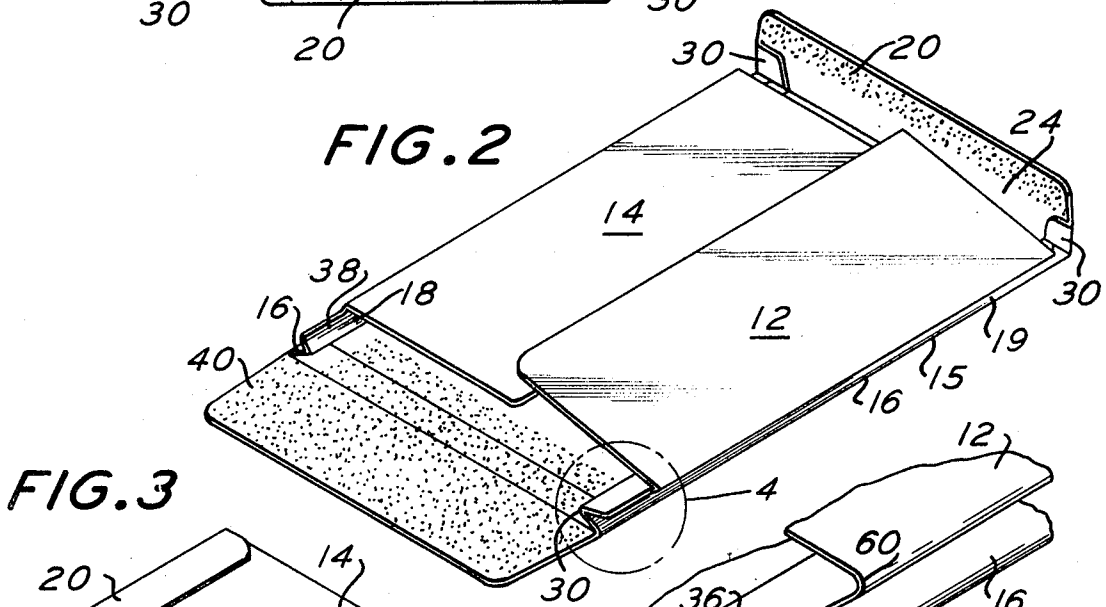


FIG. 2

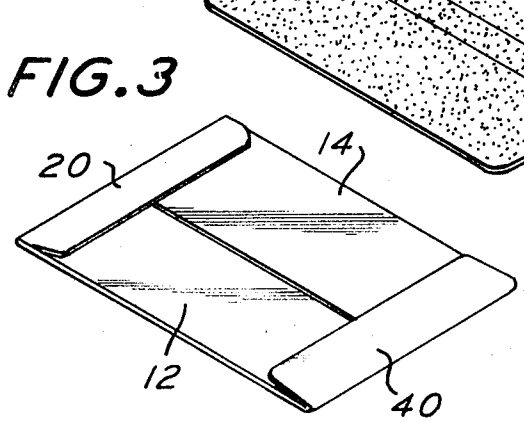


FIG. 3

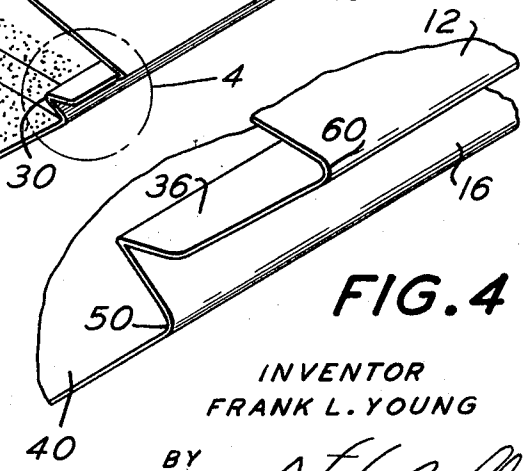


FIG. 4

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LIGHT WEIGHT EXPANSIBLE MAILING ENVELOPE

This invention relates to an expansible mailing envelope which can be fabricated from a single blank of sheet stock on continuous folding and glueing machines. More particularly, this invention relates to a very light weight of packet size which is adapted for overseas mailing to foreign countries, especially via airmail, wherein postage costs are quite high.

The primary considerations for an overseas mailing expansible envelope are concerned with its strength so that the envelope does not tear and lose its contents in transit. Up to the present time, paper and manilla envelopes have been used exclusively. However, in order to provide the required strength and durability for handling bulky mailings, heavier paper must be utilized with consequent addition to postage costs.

It is therefore an object of this invention to provide a lightweight expansible mailing envelope whose durability and resistance to tear, puncture and abrasion is at least as great as hitherto used paper envelopes.

Another object of this invention is to provide an expansible mailing envelope which is made of spunbonded olefin sheet, and which has a constructional configuration which is resistant to tearing.

Another object of this invention is to fabricate an expansible mailing envelope from a single blank of spunbonded olefin sheet stock in order to provide a construction which is stronger than its equivalent weight in paper and weighs less than half the weight of a comparable volume of the usual paper stock.

Other objects of this invention are to provide an improved device of the character described which is easily and economically produced, which is sturdy in construction, and both highly efficient and effective in operation.

With the above and related objects in view, this invention consists of the details of construction and combination of parts as will be more fully understood from the following detailed description when read in conjunction with the accompanying drawing in which:

FIG. 1 is a plan view of a spunbonded olefin sheet blank embodying this invention.

FIG. 2 is a perspective view showing the blank in partly folded and adhesively assembled disposition.

FIG. 3 is a perspective view of the envelope in fully folded and sealed flat disposition.

FIG. 4 is an enlarged fragmentary view of the encircled portion identified by the numeral 4 in FIG. 2.

Referring now in greater detail to the drawing in which similar reference characters refer to similar parts, I show a single sheet blank which is so shaped and scored as to provide when folded and adhesively secured an expansible envelope resembling an envelope in flat condition but being adapted to be expanded into boxlike disposition.

The basic advance of the instant invention resides in the use of a blank comprising a spunbonded olefin sheet in which randomly arranged continuous filament fibers, such as polyethylene, are bonded at the crossover points. The sheet produced is sold under the name "Tyvek," a trademark of E. I. duPont de Nemours & Co., of Wilmington, Del., and has a relatively smooth surface which is paperlike in texture and feel. The weight of the type 10 gauge "Tyvek" used herein is approximately 1.3 ounces per square yard for example, as compared to 2.8 to 3.5 ounces per square yard for a comparable strength paper. The dense fiber network yields extremely high resistance to tear, puncture and abrasion.

The spunbonded olefin sheet blank itself comprises a substantially rectangular front panel **10** and a back panel defined by a pair of sections **12** and **14** which are hingedly connected to the front panel by interior and exterior gusset sections **16** and **18** defined by longitudinally extending triple score lines **15**, **17** and **19**. A bottom flap **20** is hingedly secured to the lower edge of the front panel by interior and exterior gusset panels **22** and **24** defined by triple score lines **21**, **23** and **25**. Corner gusset portions **26** and **28** are hinged from the lower edge of the inboard and outboard gusset sections **16** and **18** in longitudinally aligned arrangement with interior bottom gusset panel **22**. A tab **30** is hinged to the interior corner gusset portion **26** by way of a continuation of score line **23** and further hinged to the adjacent outboard bottom gusset panel by extension of lateral score line **15**.

A top sealing flap **40** is hingedly secured to the upper edge of the front panel **10** by folding portions **32** and **34** oriented between fold lines **31**, **33** and **35**. Corner closure flaps **36** and **38** are hinged to opposite lateral edges of the folding sections **32** and **34** coextensive with the side gusset sections **16** and **18**. A rounded or radiused filet **50** is formed within the intersection of the lateral edge of the top flap **40** with the upper edge of the corner flaps **36** and **38**. Similarly, a radiused filet **60** is incorporated within the 90° inside corner defined by the intersection of the upper edge of the back panel sections **12** and **14** with the respective lateral edges of the closure flaps **36** and **38**. These filets **50** and **60** form the second significant portion of this invention and are incorporated at the open mouth of the envelope at the intersection of the adjacent panel planes whose edges themselves cross in quadrature to define an inside corner.

The envelope is assembled by first folding the back panel sections **12** and **14** inwardly, then outwardly, and then inwardly again along the triple score lines **15**, **17** and **19** such that the gusset sections **16** and **18** are folded flat between the front and back panels. The overlapping edges of the back panel sections **12** and **14** are glued together. Next, the bottom panel **20** is folded upwardly about score line **23**, glue having been applied as indicated to the bottom flap portion **20** and to the tab **30**. The closure flaps **37** and **38** are already folded flat as shown in FIG. 2.

The fabrication of the envelope proper is now completed with the bottom panel **20** adhesively sealed to the underlying edge of the back panel defined by the already glued sections **12** and **14**. As is apparent from FIGS. **2** and **4**, the radiused filets **50** and **60** which are incorporated at the mouth or open end of the envelope at the 90° inside corners formed by the edges of intersecting planes provide resistance to tearing during filling of the envelopes. It is to be observed that a radiused filet is included only at those areas at the open mouth of the envelope where a gusset panel joins a front or back panel which is not coextensive therewith such that an inside 90° inside corner is defined between the edge of the gusset panel and the adjacent edge of the front or back panel attached thereto. Therefore, by utilizing corner closure extensions **36** and **38**, the additional radiused filets **60** can be incorporated and thus provide a greater degree of strength and resistance to tearing as would be offered merely by filets **50** included at the junction of the gusset sections **16** with the top sealing flap **40**.

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

What is claimed is:

1. A lightweight expansible envelope for overseas mailing of generally bulky materials and documents especially via airmail comprising: a one-piece blank including generally rectangular front and back panels, sidewalls interconnecting the respective opposite lateral edges of the front and back panels and including inwardly folded gusset sections defined by triple score lines and lying flatly between said front and back panels when the envelope is in flat disposition, a bottom interconnecting the adjacent lower edges of said front and back panels including gusset panels defined by triple score lines and adapted to be opened into boxlike configuration with respect to said front and back panel when the envelope is expanded, a substantially rectangular sealing flap hingedly connected to the upper edge of said front panel and adapted to define a closure for the open end of the envelope, corner closure extensions of generally rectangular configuration hinged to the lateral edges of said sealing flap and to the upper edge of each of said side gusset sections, said corner closure extensions including free edges respectively intersecting with the lateral edges of said

sealing flap and the upper edge of said back panel to define a plurality of 90° intersections adjacent the open end of the envelope, and a concave radiused filet included within each 90° intersection thereby providing resistance to tearing at the open end of the envelope adjacent intersecting planes which are not coextensive in configuration.

2. The envelope of claim 1 wherein said blank is formed from spunbonded olefin sheet stock consisting essentially of randomly arranged continuous fibers binded at crossover points.

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