(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
9 February 2006 (09.02.2006)

PCT

(10) International Publication Number
WO 2006/015095 A2

(51) International Patent Classification:
B65D 33/00 (2006.01)

(21) International Application Number:
PCT/US2005/026743

(22) International Filing Date: 28 July 2005 (28.07.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/591,623	28 July 2004 (28.07.2004)	US
60/598,064	3 August 2004 (03.08.2004)	US

(71) Applicant and
(72) Inventor: **REDMOND, Sanford** [US/US]; 35 Harvard Avenue, Stamford, CT 06902 (US).

(74) Agents: **HOLLAND, Elizabeth, J.** et al.; Kenyon & Kenyon, 1500 K Street, N.W., Suite 700, Washington, DC 20005 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2006/015095 A2

(54) Title: STRESS RELIEVING INDENT FORMATION FOR VERY THIN THERMOFORMED PLASTIC FILMS OR FOIL/PLASTIC LAMINATES

(57) Abstract: A pouch-style package formed of thin film comprising a front wall, a back wall, edge seals joining the front wall and back wall, and at least one bulge formation formed in a wall of the pouch-style package, having a stress-relieving indent formed in the wall in which said bulge formation is formed, the stress-relieving indent providing material to relieve excessive thinning or stress cracking at corners of the bulge formation.

STRESS RELIEVING INDENT FORMATION FOR VERY THIN THERMOFORMED PLASTIC FILMS OR FOIL/PLASTIC LAMINATES

Cross Reference to Related Applications

[0001] This application claims priority to U.S. Provisional Patent Application Serial No. 60/591,623, filed July 28, 2004, and U. S. Provisional Patent Application Serial No. 60/598,064, filed August 3, 2004, both of which are incorporated by reference herein.

Background of the Invention

[0002] In the matter of pouch (sachet) style packages made of various very thin films, for example films of about 3 mils (.003") and less in thickness, in a variety of combinations such as coextruded muti-layer plastics, metal foil/thermoformable plastics, etc., it has been found that one or more bulges can be formed in at least one of the walls of the pouch (sachet) style containment package to increase the volumetric capacity of the pouch and/or to reduce the amount of material used to contain a specific volume, which reduces the cost significantly without much loss of barrier qualities. These bulges may be thermoformed for totally plastic walls, or, in the case of metal foil/plastic laminated combinations, where the foil is very thin, for example on the order of .0003", air pressure forming has been the most efficient means. As a matter of fact, the pre-heating for thermoforming is detrimental for foil/plastic combinations since it weakens the bond between the foil and the plastic film which the foil needs for support, and the foil ruptures in numerous stress cracks when being pressure formed. It has been further observed that the rounded ball corners of such bulges tend to thin out to where they also show stress cracks.

Summary of the Invention

[0003] The invention is directed to a system which will relieve excessive thinning and stress cracking of such rounded ball corners. The invention includes the formation of on or more stress-relieving formations in the bulge formation. In certain embodiments, the stress-relieving formation is an indent in the wall of the bulge formation. In other embodiments, the stress-relieving formation is a bulge or protrusion extending from the bulge formation. In one example, the stress-relieving formation may be a relatively shallow flat indented or protruded formation with semi-circular ends in the wall of the bulge formation.

Brief Description of the Drawings

[0004] FIG. 1 shows a pouch (sachet) with a bulge formation with a stress-relieving indent with semi-circular ends.

[0005] FIG. 2 shows another embodiment of a stress-relieving indent in the form of a channel with a semi-circular cross-section.

[0006] FIG. 3 shows another embodiment, with a plurality of stress-relieving indents.

[0007] FIG. 4 shows various shapes for stress-relieving indents or protrusions.

Detailed Description of the Drawings

[0008] A typical pouch-style package pouch is normally rectangular. A bulge member 10 may be formed in one or more walls of the pouch. These bulges with or without indents may be utilized in ordinary rectangular pouches as currently available or with various patented easy opening pouches with a flap, or with a directional tear system.

[0009] The bulge member 10 may be parallel to the edge seals 20 with ball

corners 12. In the embodiment of FIG. 1, an indent 30 with semi circular ends is formed in the wall of the pouch. The tiny wall of the indent relieves the stresses of forming the ball corners 12 by flattening out a little when the ball corners 12 are formed.

[0010] This indent system may further be utilized to reduce stresses and thinning in various other packaging and/or other uses which require formed thin wall systems.

[0011] It may be seen that the stress relieving indents may be of a variety of shapes. It may further be recognized that multiple indents of various or similar shapes may be applied to a single unit. The concept is that the indent yields additional material when the film/foil is being formed into a greater shape by flattening or deforming as the film is stretched, thereby yielding stress relief to the greater shape.

[0012] FIG. 2 shows another embodiment of a stress-relieving indent in the form of a channel with a semi-circular cross-section, as indicated by the line A-A'.

[0013] FIG. 3 shows another embodiment, with a plurality of stress-relieving indents, having a cross-section as indicated by the line B-B'.

[0014] FIG. 4 shows various shapes for stress-relieving indents or protrusions. The indent at C-C' is a semi-circular indent. The indent at C''-C''' is a reverse indent or protrusion having a similar shape as the indent at C-C'. The indent at D-D' has a shape like a quarter-circle. The indent at E-E' has an oblong shape. The indents at F-F' and G-G' are oblong in shape and crossed.

[0015] It will be appreciated that the stress-relieving indent or protrusion may take a variety of shapes within the scope of the claims.

I claim:

1. A pouch-style package formed of thin film comprising:

a front wall,

a back wall,

edge seals joining the front wall and back wall, and

at least one bulge formation formed in a wall of the pouch-style package,

characterized in that the wall in which said bulge formation is formed comprises:

a stress-relieving indent formed in the wall in which said bulge formation is formed, the stress-relieving indent providing material to relieve excessive thinning or stress cracking at corners of the bulge formation.

2. A pouch-style package as claimed in claim 1, wherein the corners of the bulge formation are rounded ball corners.

3. A pouch-style package as claimed in claim 1, wherein the indent is a reverse indent so as to form a stress-relieving protrusion.

4. A pouch-style package as claimed in claim 1, wherein the indent is a relatively shallow flat indent with semi-circular ends.

5. A pouch-style package as claimed in claim 1, wherein the indent has a semi-circular cross-section.

6. A pouch-style package as claimed in claim 1, wherein the indent is oblong in shape.

POUCH (SACHET) WITH BULGE FORMATION WITH STRESS RELIEVING INDENT WITH SEMICIRCULAR ENDS, POUCH MADE OF VERY THIN .0003" FOIL/PLASTIC LAMINATE

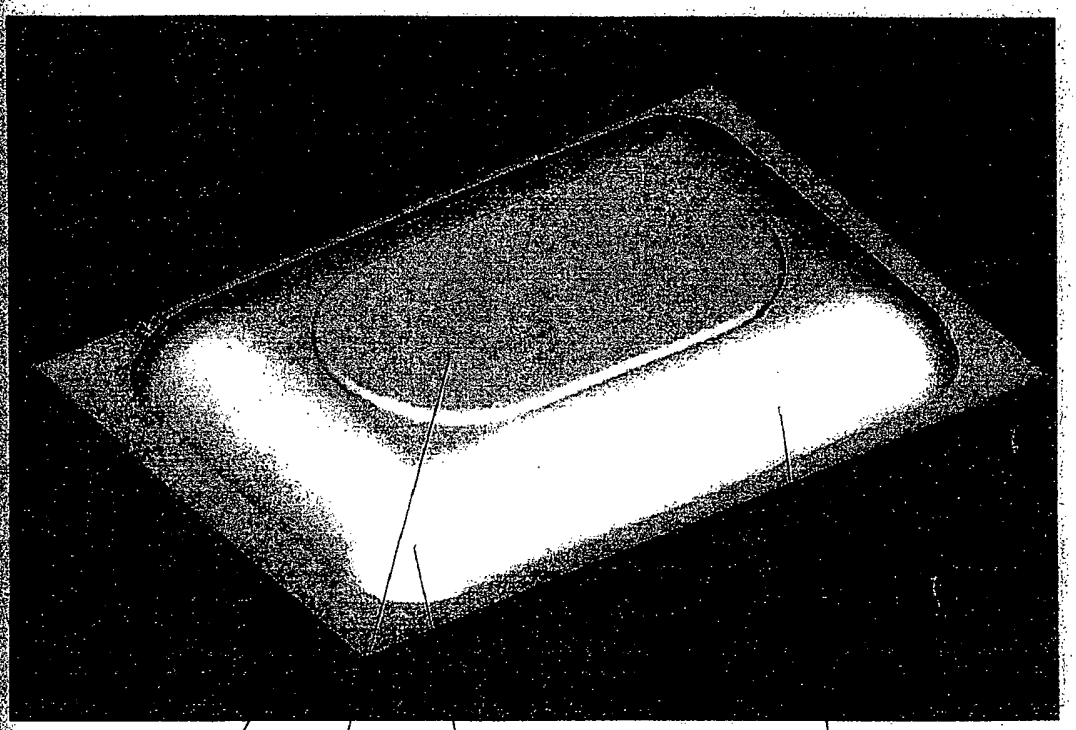


FIG 1.

EDGE SEALS 20

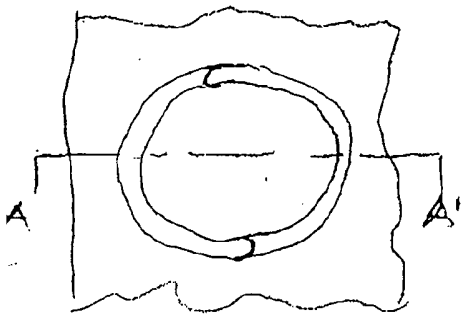
EXTERIOR OF INTERNAL STRESS RELIEVING INDENT 30

BALL CORNER 12

BULGE 10

July 17, 2009

FIG. 2



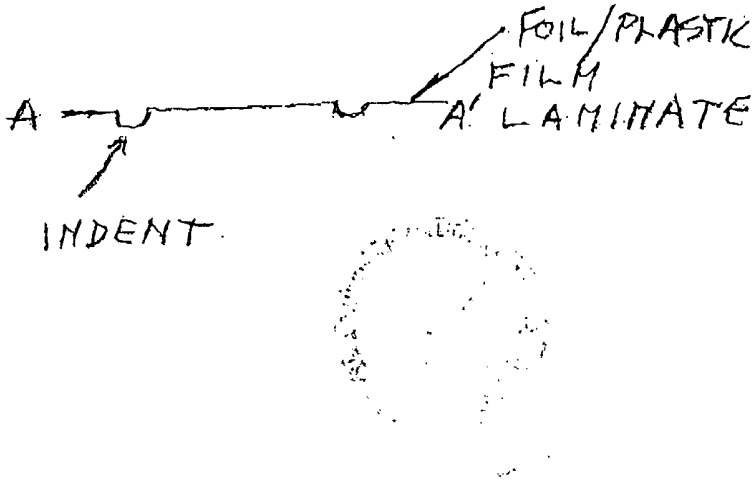
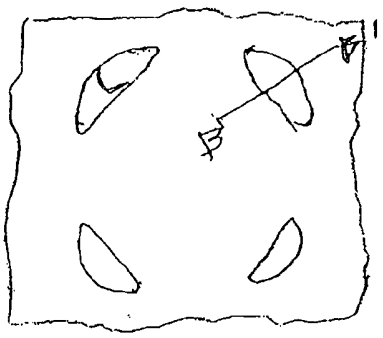


FIG. 3



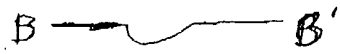
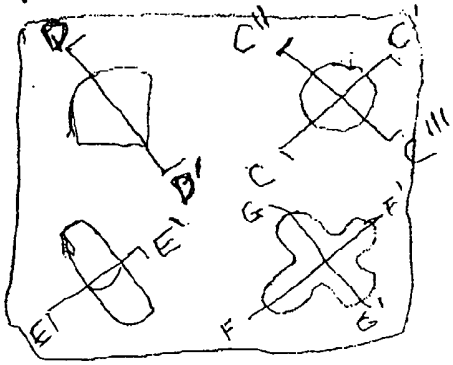


FIG. 4





reverse indent





Aug 13, 2004.