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(54) **Method and apparatus pertaining to packaging having gussets formed by at least two differing gusset-forming methodologies**

Verfahren und Vorrichtung bezüglich einer Verpackung mit Einsätzen, die mit Hilfe von mindestens zwei verschiedenen Einsatzformungsmethoden geformt werden

Procédé et appareil liés à un emballage doté de soufflets formés par au moins deux méthodes de formation de soufflet différentes

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Description

Technical Field

[0001] This invention relates generally to packaging and more particularly to the use of gussets.

Background

[0002] Many products are packaged prior to distribution and sale. Flow wrapping comprises a well-known example in these regards. By one typical approach, products to be packaged are placed within a tube of flexible material. This material is then sealed on either end of the product and severed to unitize the packaged product.

[0003] In some cases, the resultant package will flange outwardly at the sealed ends. This yields, to a lesser or greater extent, a bow-tie form factor for the package. Depending upon the application setting and the product such an appearance may be aesthetically and/or functionally inappropriate. Skilled practitioners know to employ gussets to reduce such flanging and to create a more consistently linear appearance. As used herein, a "gusset" will be understood to comprise a pocket formed by disposing a portion of the packaging material inwardly of the package itself.

[0004] Various methodologies are known for forming gussets in such an application setting. Mechanically-based gusset-forming methodologies are considered by many to yield a most consistently uniform and aesthetically-pleasing result. In a modern packaging facility the mechanically-based Gusset-forming equipment often interacts with the packaging material to form the gusset(s) at the same location and at the same time that the line seals the package and severs the packaging material to unitize the packaged product.

[0005] US 2,718,105 discloses bag-like containers of flexible strip material, the continuous forming and/or filling of same, and apparatus therefor. The material may be any flexible medium, such as plastic, cloth, paper, metal or metal foil, transparent or otherwise, or in fact anything that will conform to the described requirements. An object of the invention is the provision of an improved container of envelope type which may be formed, filled, and sealed by a series of operations. A further object of the invention is the provision of an improved container having a stiffened base of a type so that it will remain upright when set on a table or support, thereby eliminating the possibility of the contents draining therefrom after opening.

[0006] While effective and well controlled, such an approach is not necessarily adequate for all application settings. For example, some product packages contain two or more discrete items (such as, by way of illustration, two pieces of candy) that each reside within a corresponding sealed pocket. Such a package, in turn, can require more gussets than a package that only comprises a single sealed compartment. This increased number of

gussets, in turn, can greatly slow down the productivity of a given packaging line. For example, it can take about twice as long to package a product containing two three-ounce candy pieces as it takes to package a product container containing a single six-ounce candy piece.

[0007] This reduced quantity over time in turn can lead to considerable increases in cost. Such increases of course can lead to undesired increased costs for the consumer and/or reduced economic return for the manufacturer.

Summary of the Invention

[0008] The above needs are at least partially met through provision of the method and apparatus pertaining to packaging having gussets formed by at least two differing gusset-forming methodologies as defined in claims 1 and 8 respectively and described in the following detailed description with further embodiments being derivable from the dependent claims.

[0009] Generally speaking, pursuant to these various embodiments, a product comprising at least two discrete items is packaged using both a first and a second gusset-forming methodology, wherein the first gusset-forming methodology differs from the second gusset-forming methodology. By one approach, the first gusset-forming methodology comprises a mechanically-based gusset-forming methodology while the second gusset-forming methodology comprises a non-mechanically-based gusset-forming methodology (such as, but not limited to, a vacuum-based gusset-forming methodology or a gusset-forming methodology using one or more external air jets). The method described herein may, for example, be performed by equipment, such as a flow wrapping machine or mechanical or non-mechanical gusset-forming means available from the companies listed hereinafter. Correspondingly, components of the apparatus described herein may be obtained from these companies: Robert Bosch GmbH, Packaging Technology, Postfach 1127, 71301 Weiblingen, Germany, e.g. equipment of the series "HSM" or Thevopharm Pack 2000"; Multipack Systems PVT. Ltd., 9th Floor, Neptune Towers, BBC Road, Alkapuri, Vadodara, 390005 India; Fuji Packaging GmbH, Kattjahren 8, 22359 Hamburg, Germany, e.g. equipment of the series "FW 3700"; Cavanna S.p.A., Via Matteotti, 104, 28077 - Prato Sesia (NO), Italy.

[0010] The packaging, i.e. the material enclosing the items of the products, may be any type of film or foil from any type of suitable material, such as polyethylene or polypropylene or paper coated with a plastic material. In particular, the packaging may comprise a film which may have a thickness between 60 μm and 70 μm .

[0011] Starting at the outside of the package an OPP (oriented polypropylene) flame-treated release layer having a thickness of around 3 μm may be provided to avoid a blocking of the film and/or picking off a cold seal. As the next layer towards the interior of the package, preferably a clear OPP core having a thickness of approxi-

mately 14 μ , is provided for providing stiffness to the film, protecting the ink mentioned below which is used for applying graphic information, and providing a glossy appearance.

[0012] Next an OPP corona treated release layer of approximately 3 μ m may be provided to promote bonding. Next an amount of 2 to 3 g/m² adhesive may be provided to bind the above-mentioned OPP films.

[0013] Towards the inside of the package approximately 1 to 4 g/m² of ink may be applied to display graphic information.

[0014] Next towards the inside of the package about 0,9 g/m² of acrylic coating is present as an aroma barrier and/or a surface suitable for printing thereon.

[0015] Next approximately 0,3 g/m² of primer may be provided for coating adhesion. As a next layer towards the inside of the package, an OPP skin layer having a thickness of approximately 3 μ m may be present to protect the core layer mentioned below. The core layer may, for example, be formed of super white opaque cavitated OPP having a thickness of approximately 27 μ m to 37 μ m in order provide stiffness, opacity and light protection.

[0016] Towards the inside of the package another OPP skin layer of approximately 3 μ m may be provided to protect the above-mentioned core layer. Towards the inside of the package a primer is preferably present with an amount of approximately 0,3 g/m² for coating adhesion. Next, in the preferred example, an acrylic coating is provided with an amount of approximately 0,9 g/m² to provide an aroma barrier and a surface having a good smoothness or a surface roughness below a predetermined value to provide a surface suitable for applying a cold seal pattern. The cold seal is preferably applied with an amount of about 4 g/m² to provide a seal, which is preferably easy to open and reclosable.

[0017] As regards a vacuum-based gusset-forming methodology as a conceivable non-mechanically-based gusset-forming methodology, it is currently considered beneficial to apply a vacuum continuously. This will advantageously avoid pressure peaks which may be caused by on/off valves. Further, the vacuum may be pulsed between the cycles, with a lower pressure applied during gusset forming. In this context, the appropriate levels of applied vacuum or negative pressure can be determined as follows. When the packaging machine is operated at the maximum speed, the vacuum is adjusted so as to securely and reliably form gussets. In a similar manner the necessary vacuum can be determined when the machine is operated at minimum speed. During operation, the level of vacuum applied may vary between the values obtained as described above.

[0018] Pursuant to one approach, gussets at the ends of the package are formed using the first gusset-forming methodology while gussets in the middle portion of the package are formed using the second gusset-forming methodology. It is believed that packaging formed in this manner can be formed up to twice as fast as comparable gusseted packaging formed through use of mechanical-

ly-based gusset-forming methodology alone.

[0019] The resultant packaging remains aesthetically pleasing notwithstanding the use of some non-mechanically-formed gussets. The end gussets, of course, are as well formed and attractive as one would expect while the non-mechanically-formed gussets, being restricted by one approach to a middle location, are sufficiently consistent and attractive in appearance to achieve the overall aesthetic intent.

[0020] These teachings are easily employed and can be used in conjunction with many existing and already-fielded packaging lines. These teachings are also highly scalable and can be employed with a wide variety of differently-sized and comprised products and wrappers. Accordingly, significantly-reduced packaging times are achievable with only a modest capital expenditure.

Brief Description of the Drawings

[0021] These and other benefits may become clearer upon making a thorough review and study of the following detailed description, particularly when studied in conjunction with the drawings, wherein:

[0022] FIG. 1 comprises a flow diagram as configured in accordance with various embodiments of the invention;

[0023] FIG. 2 comprises a top-plan view of a product as configured in accordance with various embodiments of the invention;

[0024] FIG. 3 comprises a side-elevational schematic view of an apparatus as configured in accordance with various embodiments of the invention;

[0025] FIG. 4 comprises a top-plan detail view of an apparatus as configured in accordance with various embodiments of the invention; and

[0026] FIG. 5 comprises a top-plan detail view of an apparatus as configured in accordance with various embodiments of the invention.

[0027] Skilled artisans will appreciate that elements in the figures are illustrated for simplicity and clarity and have not necessarily been drawn to scale. For example, the dimensions and/or relative positioning of some of the elements in the figures may be exaggerated relative to other elements to help to improve understanding of various embodiments of the present invention. Also, common but well-understood elements that are useful or necessary in a commercially feasible embodiment are often not depicted in order to facilitate a less obstructed view of these various embodiments of the present invention. Certain actions and/or steps may be described or depicted in a particular order of occurrence while such specificity with respect to sequence is not actually required. The terms and expressions used herein have the ordinary technical meaning as is accorded to such terms and expressions by persons skilled in the technical field as set forth above except where different specific meanings have otherwise been set forth herein.

Detailed Description

[0028] Referring now to the drawings, and in particular to FIG. 1, an illustrative process 100 that is compatible with many of these teachings will now be presented.

[0029] This process 100 includes the step 101 of providing a product comprising at least two discrete items. As used herein, the expression "product" will be understood to refer to an item that is to be offered for sale as a single item, notwithstanding that the thing being offered for sale itself comprises multiple items. Referring momentarily to FIG. 2, minimally, this product 200 comprises at least a first item 201 and a second item 202. These teachings will readily accommodate, however, any greater number of items (as represented here by an Nth item 203 where "N" will be understood to comprise a positive integer).

[0030] Returning again to FIG. 1, these items can be identical to one another or can differ by degree or in kind. There are no particular restrictions in these regards. For the sake of simplicity and a useful illustration, it will be presumed here that these items are essentially identical chocolate pieces comprising low-profile chocolate squares. The specifics of this example serve an illustrative purpose only and are not offered with any suggestion or intent that these specifics comprise an exhaustive listing of all such possibilities in this regard.

[0031] At step 102, this process 100 provides for flow wrapping the product 200 to form a protopackage. Flow wrapping comprises a well understood area of practice in the packaging arts. Generally speaking, an item to be packaged is placed into a tube of flexible packaging material. The flow wrapping process then seals the packaging material on either side of the item in order to encapsulate the item within the packaging material and unitized to form a discrete, separated resultant package. As these practices are so well known, for the sake of brevity and for the purpose of clarity further elaboration in this regard will not be provided here.

[0032] As used herein, the expression "protopackage" will be understood to refer to a partially-packaged item; "partial" in that the item is disposed within the flow-wrap material but not yet sealed therein and not yet unitized as a single product.

[0033] At step 103 this process 100 then uses a first gusset-forming methodology to form at least one gusset in the protopackage. By one approach, this can comprise using a mechanically-based gusset-forming methodology. As used herein, this reference to "mechanically-based" will be understood to refer to a gusset-forming methodology that utilizes a solid component (such as one or more fingers) to physically contact the packaging material and by this impingement cause the packaging material to be urged inward.

[0034] With momentary reference again to FIG. 2, in this illustrative example the aforementioned gussets 501 are formed at an end portion of the protopackage and, in particular, at each of the end corners of what will com-

prise the final unitized package. The formation of such gussets at such a location and via such a mechanism comprises a well understood area of endeavor.

[0035] Referring again to FIG. 1, at step 104 this process 100 then uses a second gusset-forming methodology to form at least one gusset in the protopackage. This second gusset-forming methodology is different from the first gusset-forming methodology. This reference to being "different" will be understood, in this particular context of usage, to refer to a difference in kind and not merely a difference in degree. For example, if the first gusset-forming methodology comprises the use of a single finger to impinge upon the wrapper and thereby form a gusset, this second gusset-forming methodology cannot merely comprise the use of two or more such fingers.

[0036] The first gusset-forming methodology, by one approach, comprises a mechanically-based gusset-forming methodology while the second gusset-forming methodology comprises a non-mechanically-based gusset-forming methodology. For example, the second gusset-forming methodology can comprise using a vacuum to act upon the protopackage to form a corresponding gusset. Using a vacuum to form a gusset in flow-wrapping material comprises a known area of practice and does not require further elaboration here.

[0037] Referring again momentarily to FIG. 2, by one approach the gussets 204 formed by a second gusset-forming methodology are formed in an interior portion of the protopackage. As an illustrative example and as shown, these particular gussets 204 can be formed at the middle of what will ultimately be the resultant package 200.

[0038] Referring again to FIG. 1, this process 100 can further optionally accommodate, as desired, further steps in these regards. This can include the step 105 of sealing the protopackage proximal to the aforementioned gussets 501 and 204 to thereby seal the product within the protopackage. Such sealing can be achieved in any of a variety of ways including through applied heat, cold-sealing (which typically employs both an adhesive and applied pressure), and so forth. Pursuant to a step 106 this process 100 can also provide for cutting the protopackage proximal to at least one gusset as was formed using the first gusset-forming methodology to thereby unitize the product 200 and form a unitized package.

[0039] Another step 107 can provide for forming perforations proximal to the gusset(s) that were formed using the second gusset-forming methodology. These perforations 206 can extend laterally across the wrapper as shown in FIG. 2 and can thereby facilitate permitting an end user to separate the discrete items 201 and 202 from one another (using only the end user's hands and without requiring resort to a gripping or cutting tool, presuming the end user to be at least an average able-bodied human being of age twelve or older) without breaking the seal for any of the discrete items.

[0040] So configured, such a process will yield a resultant product 200 having at least two sealed compart-

ments 207 and 208 that contain, respectively, one or more items. These compartments are bounded at their ends by seals 205, which seals also interact with the aforementioned gussets 501 and 204 to retain the shape of these gussets. Those skilled in the art will recognize and appreciate that the gussets 501 at the ends of the product 200 will be of high and consistent quality when using a high-quality process such as a mechanically-based gusset-forming methodology. The gussets 204 in the interior portion of the product 200 will likely not be as consistent, but the applicant has determined that these gussets will nevertheless be of sufficiently-acceptable function and appearance when placed at such a location as to be acceptable without diminishing the visual appearance or the commercial appeal of the product itself.

[0041] A further illustrative example may be helpful. Those skilled in the art will recognize and understand that this example is intended to serve only in an illustrative capacity and is not intended to comprise an exhaustive listing of all possibilities in this regard. Referring now to FIG. 3, a given packaging line can receive a flow of flow-wrapping material 301. Product items 201 and 202 are placed within this material 301 as this occurs. A vacuum system 302 serves to draw a vacuum within the wrapping material 301 as desired. If desired, the operation of this vacuum can be cycled. For many application settings, however, the system may be left running continuously. The latter approach will aid in preventing inertia-based time delays and this in turn can contribute to optimum throughput.

[0042] At a sealing station 303 a pair of rotating members carry sealing jaws that move in synchronism with one another to form the aforementioned seals in the flow-wrapper material 301 in accord with well-understood prior art technique. In this illustrative example, where both full-lateral cuts and perforations are formed in the material 301, some of the sealing jaws 304 present a cutting surface while other sealing jaw 305 present a perforations-forming surface. In this example, these jaws 304 and 305 alternate such that every other seal occurs in conjunction with a full-lateral cut while the remaining seals occur in conjunction with lateral perforations. Such a configuration will yield products having two compartments that are easily separated by an end user by ripping the material 301 along the perforations. It will be understood that other configurations can be readily applied to obtain three-compartment products, four-compartment products, and so forth as desired.

[0043] Also in this illustrative example, mechanically-formed gussets are formed during the same step as when the aforementioned full-lateral cuts are made. Referring momentarily to both FIGS. 4 and 5, this can comprise using a pair of fingers 401 on each side of the protopackage to move inwards and impinge the side of the wrapping material 301 (as shown particularly in FIG. 5) to form a corresponding pocket 501 that will serve as the desired gussets. (These fingers are not shown in FIG. 3.)

[0044] Similarly, and referring again to FIG. 3, non-me-

chanically-formed gussets are formed during the same step as when the aforementioned lateral perforations are made. As described earlier, these non-mechanically-formed gussets can be formed by drawing a vacuum within the wrapping material 301 by use of the aforementioned vacuum system 302 without also applying pressure to the exterior of the packaging material

[0045] So configured, such a packaging line will yield resultant packaged products 200 that comprise two items 201 and 202 that are each individually contained within corresponding sealed compartments. The end user can then purchase the product 200 and separate the two compartments when and as desired.

[0046] It is believed that the above-described process can run as quickly as a line that handles an identical quantity of items while producing only one-compartment packages. This appears true whether the line handles dozens of packages per minute or hundreds. This is largely owing to the fact that the present teachings require only as many mechanically-formed gussets as the one-compartment approach. The use of mechanically-formed gussets at the ends of the resultant product yields a consistently well-formed and attractive look while the use of non-mechanically-formed gussets at the middle of the product, proximal to the inner seals and perforation, are sufficiently effective and attractive as to support corresponding functional and aesthetic marketing requirements. For example, it may currently be possible to produce 400 to 450 packages of 100 gram chocolate tablets per minute. With the method described herein, it is expected that 800 to 900 50 gram packages per minute can be realized. Thus, the same weight of packaged products can be produced with the additional benefit of having smaller items of one of the same product.

[0047] These teachings are easily leveraged with existing packaging approaches. In particular, these teachings can be fielded with only minor and relatively simple and inexpensive retrofitting to many existing packaging lines. It will also be appreciated that these teachings are highly scalable and can be successfully employed in a wide variety of application settings and with a very diverse set of items to be packaged.

[0048] A wide variety of modifications, alterations, and combinations can be made with respect to the above described embodiments without departing from the scope of the invention as claimed. Such modifications, alterations, and combinations are to be viewed as being within the ambit of the inventive concept.

Claims

1. A method comprising:

providing (101) a product (200) comprising at least two discrete items (201 and 202);
flow wrapping (102) the product to form a protopackage;

using (103) a first gusset-forming methodology to form at least one gusset (501) in the protopackage;

the method further being **characterized by**:

using (104) a second gusset-forming methodology to form at least one additional gusset (204) in the protopackage, wherein the second gusset-forming methodology is different from the first gusset-forming methodology, and comprises non-mechanically-based gusset-forming methodology, like using vacuum or external air jets.

2. The method of claim 1 further **characterized in that** the first gusset-forming methodology comprises a mechanically-based gusset-forming methodology.

3. The method of claim 2 further **characterized in that** using the mechanically-based gusset-forming methodology comprises use of at least one finger that impinges upon the protopackage to form a corresponding gusset.

4. The method of claims 1 to 3 further **characterized in that** using the non-mechanically-based gusset-forming methodology comprises use of a vacuum to act upon the protopackage to form a corresponding gusset.

5. The method of one of the preceding claims further **characterized in that** using a first gusset-forming methodology to form at least one gusset in the protopackage comprises using a first gusset-forming methodology to form at least one gusset in the protopackage at an end portion of the protopackage.

6. The method of claim 5 further **characterized in that** using a second gusset-forming methodology to form at least one gusset in the protopackage comprises using a second gusset-forming methodology to form at least one gusset in the protopackage at a middle portion of the protopackage in-between the two discrete items.

7. The method of one of the preceding claims further **characterized by**:

sealing the protopackage proximal to the gussets to seal the product within the protopackage; cutting the protopackage proximal to the at least one gusset formed using the first gusset-forming methodology to unitize the product and form a unitized package;

forming perforations proximal the at least one gusset formed using the second gusset-forming methodology to thereby facilitate permitting an

end user to separate the discrete items from one another without breaking the seal for any of the discrete items.

8. Apparatus comprising:

means (300) for providing a product (200) comprising at least two discrete items (201 and 202) and for flow wrapping the product in a packaging material; and means (401) for using a first gusset-forming methodology to form at least one gusset (501) in the packaging material; the apparatus further being **characterized by**:

means (302) for using a second gusset-forming methodology to form at least one additional gusset (204) in the packaging material, wherein the second gusset-forming methodology is different from the first gusset-forming methodology, and comprises a non-mechanically-based gusset-forming methodology, like using vacuum or external air jets.

9. The apparatus of claim 8 wherein the first gusset-forming methodology comprises using one or more fingers to impinge on the packaging material, and wherein the second gusset-forming methodology comprises drawing a vacuum within the packaging material without applying pressure to the exterior of the packaging material.

Patentansprüche

1. Verfahren, mit:

Bereitstellen (101) eines Produkts (200) mit mindestens zwei getrennten Gegenständen (201 und 202);

Schlauchverpacken (102) des Produkts, um eine Protoverpackung auszubilden;

Verwenden (103) einer ersten faltungsausbildenden Methodik, um zumindest eine Faltung (501) in der Protoverpackung auszubilden, wobei das Verfahren ferner **gekennzeichnet ist durch**:

Verwenden (104) einer zweiten faltungsausbildenden Methodik, um zumindest eine zusätzliche Faltung (204) in der Protoverpackung auszubilden, wobei die zweite faltungsausbildende Methodik sich von der ersten faltungsausbildenden Methodik unterscheidet und eine nicht mechanisch basierte faltungsausbildende Methodik, beispielsweise unter Verwendung eines Vaku-

- ums oder externer Luftstrahlen, umfasst.
2. Verfahren nach Anspruch 1, ferner **dadurch gekennzeichnet, dass** die erste faltungsausbildende Methodik eine mechanisch basierte faltungsausbildende Methodik ist. 5
 3. Verfahren nach Anspruch 2, ferner **dadurch gekennzeichnet, dass** ein Verwenden der mechanisch basierten faltungsausbildenden Methodik eine Verwendung von mindestens einem Finger umfasst, der auf die Protoverpackung trifft, um eine entsprechende Faltung auszubilden. 10
 4. Verfahren nach einem der Ansprüche 1 bis 3, ferner **dadurch gekennzeichnet, dass** eine Verwendung der nicht mechanisch basierten faltungsausbildenden Methodik eine Verwendung eines Vakuums umfasst, um auf die Protoverpackung einzuwirken, um eine entsprechende Faltung auszubilden. 15 20
 5. Verfahren nach einem der vorstehenden Ansprüche, ferner **dadurch gekennzeichnet, dass** eine Verwendung einer ersten faltungsausbildenden Methodik, um mindestens eine Faltung in der Protoverpackung auszubilden, eine Verwendung einer ersten faltungsausbildenden Methodik umfasst, um mindestens eine Faltung in der Protoverpackung bei einem Endabschnitt der Protoverpackung auszubilden. 25 30
 6. Verfahren nach Anspruch 5, ferner **dadurch gekennzeichnet, dass** eine Verwendung einer zweiten faltungsausbildenden Methodik, um zumindest einer Faltung in der Protoverpackung auszubilden, ein Verwendung einer zweiten faltungsausbildenden Methodik umfasst, um mindestens eine Faltung in der Protoverpackung bei einem mittleren Abschnitt der Protoverpackung zwischen den zwei getrennten Gegenständen auszubilden. 35 40
 7. Verfahren nach einem der vorstehenden Ansprüche, ferner **gekennzeichnet durch:**

Versiegeln der Protoverpackung proximal zu der Faltung, um das Produkt in der Protoverpackung zu versiegeln; 45

Schneiden der Protoverpackung proximal zu der mindestens einen Faltung, die unter Verwendung der ersten faltungsausbildenden Methodik ausgebildet worden ist, um das Produkt in Einheiten aufzuteilen und eine in Einheiten aufgeteilte Verpackung auszubilden; 50

Ausbilden von Perforationen proximal zu mindestens einer Faltung, die unter Verwendung der zweiten faltungsausbildenden Methodik ausgebildet worden ist, um es dadurch einem Endverbraucher erleichternd zu ermöglichen, 55

die getrennten Gegenstände voneinander zu trennen ohne die Versiegelung von einem beliebigen der getrennten Gegenstände zu brechen.

8. Vorrichtung, mit:

einem Mittel (300) zum Bereitstellen eines Produkts (200) mit mindestens zwei getrennten Gegenständen (201 und 202) und zum Schlauchverpacken des Produkts in einem Verpackungsmaterial;
und einem Mittel (401) zum Verwenden einer ersten faltungsausbildenden Methodik, um mindestens eine Faltung (501) in dem Verpackungsmaterial auszubilden;
wobei die Vorrichtung ferner **gekennzeichnet ist durch:**

ein Mittel (302) zum Verwenden einer zweiten faltungsausbildenden Methodik, um zumindest eine zusätzliche Faltung (204) in dem Verpackungsmaterial auszubilden, wobei die zweite faltungsausbildende Methodik sich von der ersten faltungsausbildenden Methodik unterscheidet und eine nicht mechanisch basierte faltungsausbildende Methodik, wie zum Beispiel die Verwendung eines Vakuums oder externer Luftstrahlen, umfasst.

9. Vorrichtung nach Anspruch 8, bei der die erste faltungsausbildende Methodik eine Verwendung von einem oder mehreren Fingern umfasst, um auf das Verpackungsmaterial aufzutreffen, und wobei die zweite faltungsausbildende Methodik das Saugen eines Vakuums in dem Verpackungsmaterial ohne Aufbringen von Druck auf das Äußere des Verpackungsmaterials umfasst.

Revendications

1. Procédé comprenant les étapes consistant à :

fournir (101) un produit (200) comprenant au moins deux articles distincts (201 et 202) ;
ensacher (102) le produit pour former un protoemballage ;
utiliser (103) une méthodologie de formation de premier soufflet pour former au moins un soufflet (501) dans le proto-emballage ;
le procédé étant, en outre, **caractérisé par :**

l'utilisation (104) d'une méthodologie de formation de deuxième soufflet pour former au moins un soufflet (204) supplémentaire dans le proto-emballage, la méthodologie

- de formation de deuxième soufflet étant différente de la méthodologie de formation de premier soufflet, et comprenant une méthodologie de formation de soufflet non mécanique, telle que l'utilisation de vide ou de jets d'air externes.
2. Procédé selon la revendication 1, **caractérisé, en outre, en ce que** la méthodologie de formation de premier soufflet comprend une méthodologie de formation de soufflet mécanique. 10
 3. Procédé selon la revendication 2, **caractérisé, en outre, en ce que** l'utilisation de la méthodologie de formation de soufflet mécanique comprend l'utilisation d'au moins un doigt qui frappe le proto-emballage pour former un soufflet correspondant. 15
 4. Procédé selon l'une des revendications 1 à 3, **caractérisé, en outre, en ce que** l'utilisation de la méthodologie de formation de soufflet non mécanique comprend l'utilisation d'un vide pour agir sur le proto-emballage afin de former un soufflet correspondant. 20
 5. Procédé selon l'une des revendications précédentes, **caractérisé, en outre, en ce que** l'utilisation d'une méthodologie de formation de premier soufflet pour former au moins un soufflet dans le proto-emballage comprend l'utilisation d'une méthodologie de formation de premier soufflet pour former au moins un soufflet dans le proto-emballage en une partie d'extrémité du proto-emballage. 25 30
 6. Procédé selon la revendication 5, **caractérisé, en outre, en ce que** l'utilisation d'une méthodologie de formation de deuxième soufflet pour former au moins un soufflet dans le proto-emballage comprend l'utilisation d'une méthodologie de formation de deuxième soufflet pour former au moins un soufflet dans le proto-emballage en une partie centrale du proto-emballage entre les deux articles distincts. 35 40
 7. Procédé selon l'une des revendications précédentes, **caractérisé, en outre, par** les étapes consistant à : 45
 - souder le proto-emballage à proximité des soufflets pour étancher le produit au sein du proto-emballage ;
 - couper le proto-emballage à proximité de l'au moins un soufflet formé en utilisant la méthodologie de formation de premier soufflet pour fardeler le produit et former un emballage fardelé ;
 - réaliser des perforations à proximité de l'au moins un soufflet formé en utilisant la méthodologie de formation de deuxième soufflet afin de permettre plus facilement à un utilisateur final de séparer les deux articles distincts l'un de 50 55

l'autre sans rompre la soudure pour l'un quelconque des articles distincts.

8. Appareil comprenant :

un moyen (300) pour fournir un produit (200) comprenant au moins deux articles distincts (201 et 202) et pour ensacher le produit dans un matériau d'emballage ;
et un moyen (401) pour utiliser une méthodologie de formation de premier soufflet afin de former au moins un soufflet (501) dans le matériau d'emballage ;
l'appareil étant, en outre, **caractérisé par** :

un moyen (302) pour utiliser une méthodologie de formation de deuxième soufflet afin de former au moins un soufflet (204) supplémentaire dans le matériau d'emballage, la méthodologie de formation de deuxième soufflet étant différente de la méthodologie de formation de premier soufflet, et comprenant une méthodologie de formation de soufflet non mécanique, telle que l'utilisation de vide ou de jets d'air externes.

9. Appareil selon la revendication 8, dans lequel la méthodologie de formation de premier soufflet comprend l'utilisation d'un ou de plusieurs doigts pour frapper le matériau d'emballage, et la méthodologie de formation de deuxième soufflet comprend la création d'un vide au sein du matériau d'emballage sans appliquer de pression sur l'extérieur du matériau d'emballage.

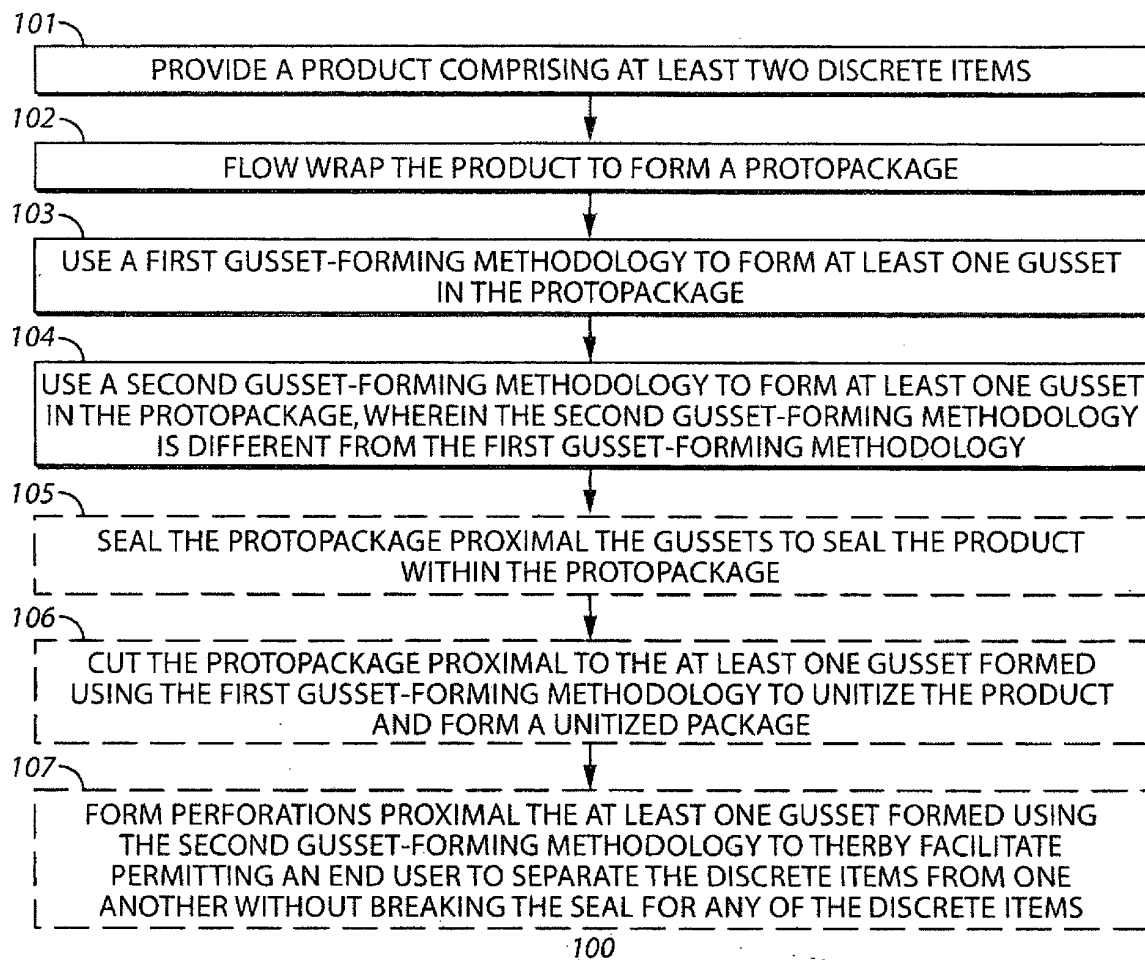


FIG. 1

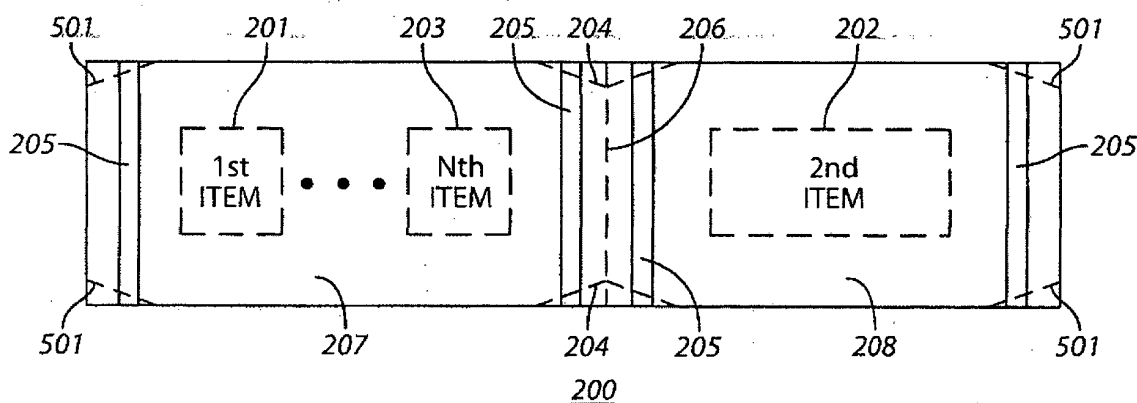


FIG. 2

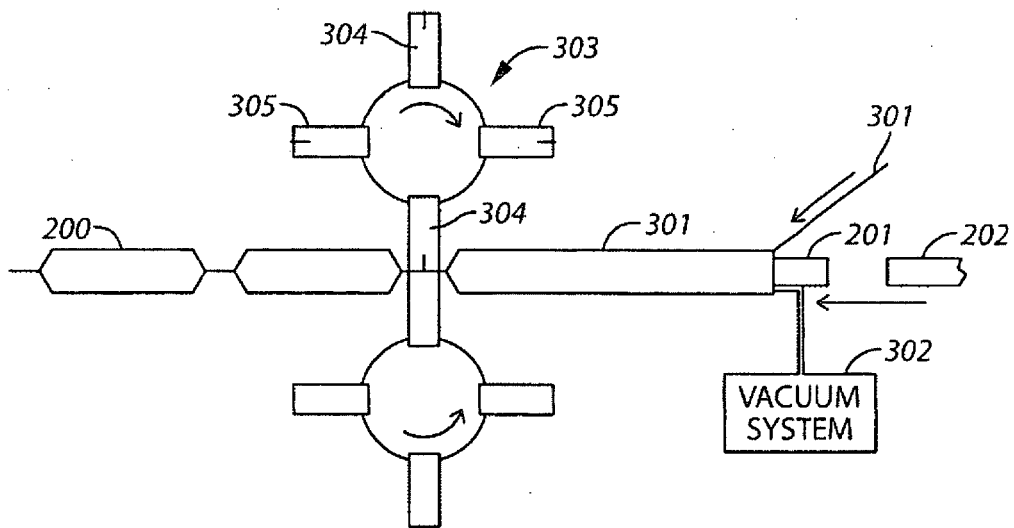


FIG. 3

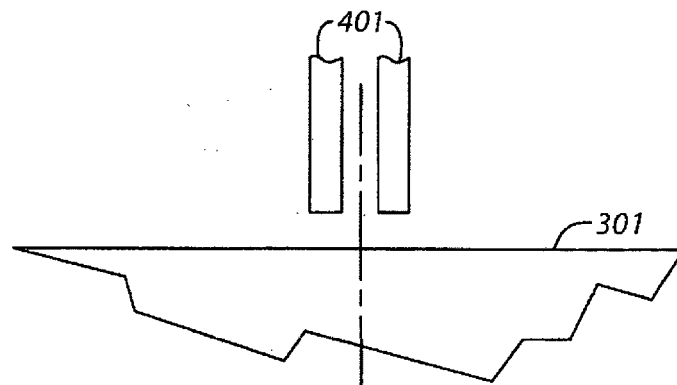


FIG. 4

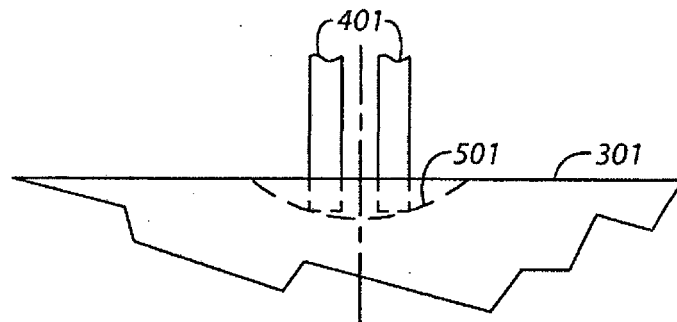


FIG. 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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