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(54) MULTI-COMPARTMENT PACKAGING DEVICE

(57) A multi-compartment packaging device (10) for a single product includes a flexible pouch (12) defining an interior cavity (12d), having at least two sidewalls, a closed end along one end of the pouch, and an open but closeable end for receiving a product therethrough along an opposing end of the pouch. The length of the pouch extends from the open end to the closed end. At least one permanent partition strip (14) is located within the interior cavity of the flexible pouch, extending from one of the open and closed ends toward the other of the open and closed ends. The length (L2) of the partition strip is shorter than the pouch length (L1), to form at least two separate but fluidly communicating compartments (14a) within the interior cavity.

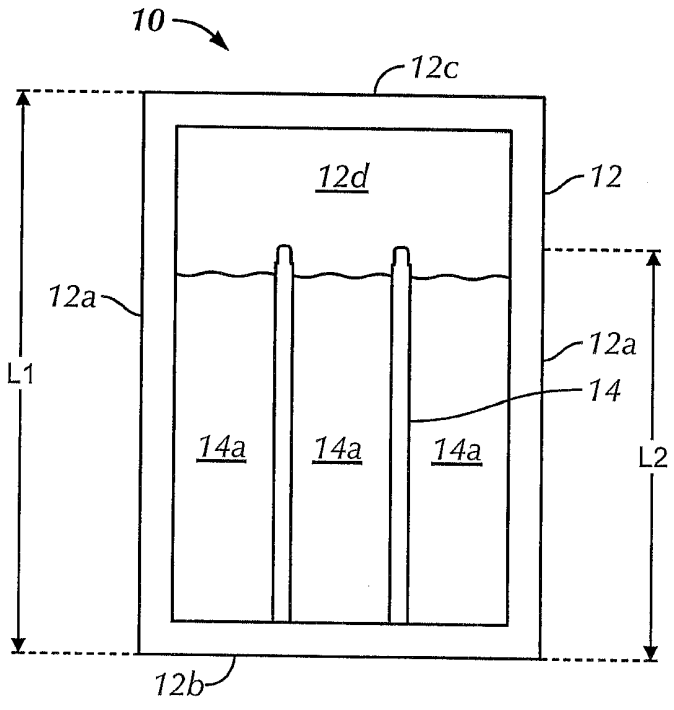

FIG. 1A

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention is generally directed to a multi-compartment packaging device, and more particularly to a multi-compartment packaging device having at least one partition strip therein.

[0002] Packages such as bags or pouches containing a product therein are naturally subject to the laws of gravity. Therefore, the less volume the contents within a flexible package occupy, the more the contents shift from one end of the package to the other during transport. Thus, the contents within the package frequently reshape the package into a generally conical shape, i.e., wider at one end and narrower at the opposing end. One disadvantage of such packages is that multiple packages, each of a relatively different shape, will not stack up well against one another, and thus take up more space in transport, or in storage. Another disadvantage of such packages is that they are not optimal for handling.

[0003] Therefore, it would be advantageous to manufacture a packaging device having multiple compartments therein, to assist in more equally distributing contents throughout the packaging device, in order to improve handling, and efficient transport and storage.

BRIEF SUMMARY OF THE INVENTION

[0004] Briefly stated, one aspect of the present invention is directed to a multi-compartment packaging device for a single product. The packaging device comprises a flexible pouch defining an interior cavity, having at least two sidewalls, a closed end along one end of the pouch, and an open but closeable end for receiving a product therethrough along an opposing end of the pouch. A pouch length extends from the open end to the closed end. At least one permanent partition strip is located within the interior cavity of the flexible pouch, extending from one of the open and closed ends toward the other of the open and closed ends and having a strip length which is shorter than the pouch length. The at least one partition strip forms at least two separate but fluidly communicating compartments within the interior cavity.

[0005] Another aspect of the invention is directed to multi-compartment package having a single product therein. The package comprises a flexible pouch defining an interior cavity, having at least two sidewalls, a first closed end along one end of the pouch, a second closed end along an opposing end of the pouch. A pouch length extends from the first closed end to the second closed end. At least one permanent partition strip is located within the interior cavity of the flexible pouch, and extends from one of the first and second closed ends toward the other of the first and second closed ends, and having a strip length which is shorter than the pouch length. The at least one partition strip forms at least two separate but fluidly communicating compartments within the interior cavity. The single product is contained within the interior cavity.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The foregoing summary, as well as the following detailed description of a preferred embodiment of the invention, will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, there is shown in the drawings an embodiment which is presently preferred. It should be understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown. In the drawings:

Fig. 1A is a side elevational view of a packaging device of the current invention, including continuous partition strips;

Fig. 1B is a perspective view of the packaging device of Fig. 1A;

Fig. 2A is a side elevational view of the packing device of the current invention, including partition strips comprised of successive discrete portions; and

Fig. 2B is a perspective view of the packaging device of Fig. 2A.

DESCRIPTION OF THE DISCLOSURE

[0007] Certain terminology is used in the following description for convenience only and is not limiting. The words "lower," "bottom," "upper" and "top" designate directions in the drawings to which reference is made. The words "inwardly," "outwardly," "upwardly" and "downwardly" refer to directions toward and away from, respectively, the geometric center of the packaging device, and designated parts thereof, in accordance with the present disclosure. Unless specifically set forth herein, the terms "a," "an" and "the" are not limited to one element, but instead should be read as meaning "at least one." The terminology includes the words noted above, derivatives thereof and words of similar import.

[0008] It should also be understood that the terms "about," "approximately," "generally," "substantially" and like terms, used herein when referring to a dimension or characteristic of a component of the invention, indicate that the described dimension/characteristic is not a strict boundary or parameter and does not exclude minor variations therefrom that are functionally similar. At a minimum, such references that include a numerical parameter would include variations that, using mathematical and industrial principles accepted in the art (e.g., rounding, measurement or other systematic errors, manufacturing tolerances, etc.), would not vary the least significant digit.

[0009] Referring to the drawings in detail, wherein like numerals indicate like elements throughout, there is shown in Figs. 1A-2B a preferred embodiment of a packaging device, generally designated 10, according to the

present invention. The packaging device 10 is adapted for sealingly packaging any one of a numerous variety of products or formulations, such as, for example, without limitation, topical formulations, e.g., gel, oil, cream, shampoo, and lotion, pharmaceutical products, cosmetic products and the like, and for more equally distributing the product or formulation throughout the packaging device 10.

[0010] As shown in Figs 1A-2B, the packaging device 10 includes a flexible pouch 12. In the illustrated embodiment, the pouch 12 is generally rectangular in shape, having opposing sidewalls 12a, a closed end 12b along one end of the pouch 12, and an open but closeable end 12c, along an opposing end of the pouch. A product or formulation is received into an interior cavity 12d of the pouch 12 via the open end 12c. As should be understood by those of ordinary skill in the art, however, the pouch 12 may take the form of any of numerous different shapes, while having an opening sufficient for inserting a product into the pouch 12. The pouch 12 defines a length L_1 extending from the open end 12c to the closed end 12b.

[0011] The pouch 12 is preferably formed of multiple overlying polymeric layers. For example, without limitation, the pouch 12 may be formed of a first or interior polyethylene ("PE") layer, a second or middle aluminum layer, and a third or exterior polyethylene terephthalate ("PET") layer. Each polymeric layer may be adhered to the adjacent layer by gluing or sticking the two layers to one another via an intervening binding layer, such as, for example, without limitation, a layer of ethylene acrylate copolymer ("EEA"). Alternatively, the polymeric layers may be laminated together, i.e., adhered together by heating. As another example, without limitation, the pouch 12 may be formed of a first or interior Surlyn® layer (Surlyn® Ionomer Resin, sold by E. I. du Pont de Nemours and Company of Wilmington, Delaware), a second or middle aluminum layer, and a third or exterior PET layer. In some embodiments, the pouch 12 may be formed of a single layer.

[0012] One advantage of having an interior Surlyn® layer is that Surlyn® melts at a lower temperature than PE, and therefore the open end 12c of the pouch 12 can be heat sealed substantially without degrading or damaging a heat sensitive product inside the pouch 12. As should be understood by those of ordinary skill in the art, however, the multiple layer pouch 12 may alternatively be made of a single polymeric material. As also should be understood by those of ordinary skill in the art, the pouch 12 may be formed of any of numerous different materials, currently known or that later become known, providing generally the same properties for the pouch 12 as described herein. Further, the pouch 12 may be appropriately sized for receiving the desired quantity/volume of product, such as, for example, without limitation, within the range of about 10 ml to about 300 ml.

[0013] As shown, at least one permanent partition strip 14 is formed within the interior cavity 12d of the pouch 12, extending from one of the open (12c) and closed (12b) ends toward the other of the open (12c) and closed (12b) ends of the pouch 12. In the illustrated embodiment, each partition strip 14 extends from the closed end 12b and defines a substantially equivalent length L_2 that is shorter than the pouch length L_1, thereby forming at least two separate, but fluidly communicating compartments 14a within the interior cavity 12d. In the illustrated embodiment, the interior cavity 12d includes two spaced apart partition strips 14, thereby forming three compartments 14a. However, as should be understood by those of ordinary skill in the art, the pouch 12 may include one partition strip 14 or more than two partition strips 14, according to, for example, the size of the pouch 12. As also should be understood, the partition strips 14 may have different lengths, but are preferably shorter than the length L_1 of the pouch 12.

[0014] Each partition strip 14 may be formed by heat sealing the opposing interior sides of the pouch 12 using a press, in a manner well understood by those of ordinary skill in the art. Alternatively, a strip of material, scalable to the opposing interior sides may be placed within the pouch 12 during manufacture thereof, and sealed to the interior sides via a heated press, or through a non-heated adhesive. It should be understood that the partition strips 14 are permanent, meaning that a force applied to separate the opposing sides of the pouch 12 will damage, tear or rupture the pouch 12 prior to tearing or rupturing the partition strip 14. As shown in Figs. 1A, 1B, the partition strips 14 may comprise a continuous strip 14, or, alternatively, as shown in Figs. 2A, 2B, the partition strips 14 may comprise a plurality of successive discrete portions 14b. As the partition strips 14 are shorter than the length L_1 of the pouch 12, the compartments 14a are fluidly communicated regardless.

[0015] In use, a single product or formulation, i.e., a single substance or a pre-mixed substance, is filled into the interior cavity 12d of the pouch 12 through the open end 12c, preferably with the pouch 12 oriented with the open end 12c at the top, as shown in Fig. 1A, and then the open end 12c of the pouch 12 is sealed, e.g., via heat sealing. The pouch 12 may include the partition strip(s) 14 prior to filling the interior cavity 12d with the product, or, alternatively, if the product is not heat sensitive, each partition strip 14 may be formed after a desired amount of product is filled into the interior cavity 12d, or after the entire desired amount of product is inserted into the interior cavity 12.

[0016] One advantage of the partition strip(s) 14 is that the strip(s) 14 increase the structural integrity of the flexible pouch 12, helping the pouch 12 to remain in a more stable shape during handling, transport and storage. The partition strip(s) 14 also function to more equivalently distribute the product among the compartments 14a, and to partially impede to product from moving within the pouch 12 when the pouch is oriented as shown in Fig. 1A, according to gravitational force, thereby assisting in preventing the pouch 12 from having one end 12b being

substantially wider than the opposing end 12c. Accordingly, for example, the pouch 12 may more closely maintain a rectangular shape, providing for improved handling, as well as more efficient storage, such as, for example, via more efficient stacking of multiple packages 10 atop one another.

[0017] It will be appreciated by those skilled in the art that changes could be made to the embodiment described above without departing from the broad inventive concept thereof. It is understood, therefore, that this disclosure is not limited to the particular embodiment disclosed, but it is intended to cover modifications within the spirit and scope of the present disclosure as defined by the appended claims.

Claims

1. A multi-compartment packaging device for a single product, comprising:

a flexible pouch defining an interior cavity, having at least two sidewalls, a closed end along one end of the pouch, and an open but closeable end for receiving a product therethrough along an opposing end of the pouch, a pouch length extending from the open end to the closed end; and

at least one permanent partition strip within the interior cavity of the flexible pouch, extending from one of the open and closed ends toward the other of the open and closed ends and having a strip length which is shorter than the pouch length, said at least one partition strip forming at least two separate but fluidly communicating compartments within the interior cavity.

2. The multi-compartment packaging device of claim 1, wherein the at least one partition strip comprises a continuous partition strip.

3. The multi-compartment packaging device of claim 1, wherein the at least one partition strip comprises a plurality of successive discrete portions.

4. The multi-compartment packaging device of claim 1, wherein the flexible pouch is constructed of a plurality of overlying polymeric layers.

5. The multi-compartment packaging device of claim 4, wherein the flexible pouch is constructed of a PET layer, an aluminum layer and one of a PE layer or a Surlyn® layer.

6. The multi-compartment packaging device of claim 1, wherein the at least one permanent partition strip is comprised of a heat sealed material.

7. A multi-compartment package for a single product, comprising:

a flexible pouch defining an interior cavity, having at least two sidewalls, a first closed end along one end of the pouch, a second closed end along an opposing end of the pouch, a pouch length extending from the first closed end to the second closed end;

at least one permanent partition strip within the interior cavity of the flexible pouch, extending from one of the first and second closed ends toward the other of the first and second closed ends and having a strip length which is shorter than the pouch length, said at least one partition strip forming at least two separate but fluidly communicating compartments within the interior cavity; and

a single product contained within the interior cavity.

8. The multi-compartment package of claim 7, wherein the single product is substantially equivalently distributed among the at least two fluidly communicating compartments.

9. The multi-compartment package of claim 7, wherein the at least one partition strip comprises a continuous partition strip.

10. The multi-compartment package of claim 7, wherein the at least one partition strip comprises a plurality of successive discrete portions.

11. The multi-compartment package of claim 7, wherein the at least one permanent partition strip is comprised of a heat sealed material.

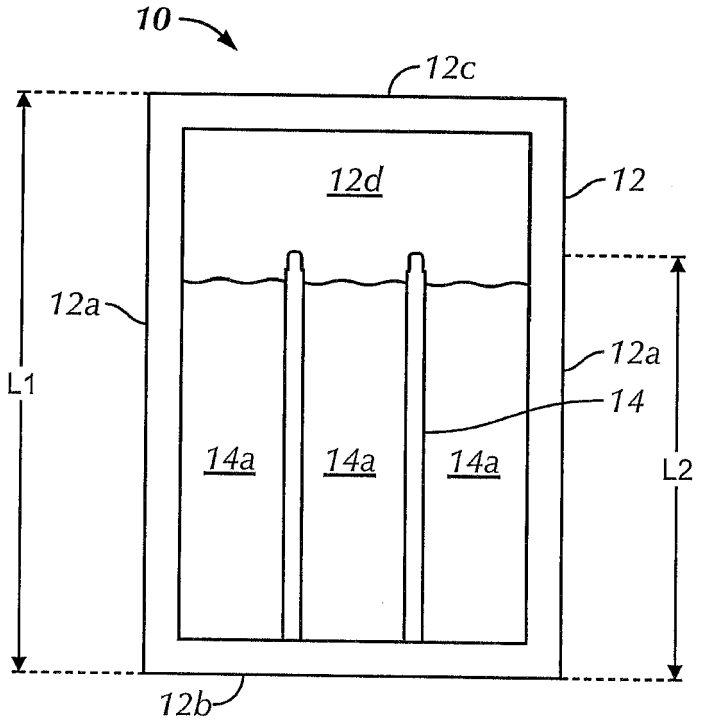
10
12c
12d
12
12a
L1
12a
14
14a
14a
14a
L2
12b

FIG. 1A

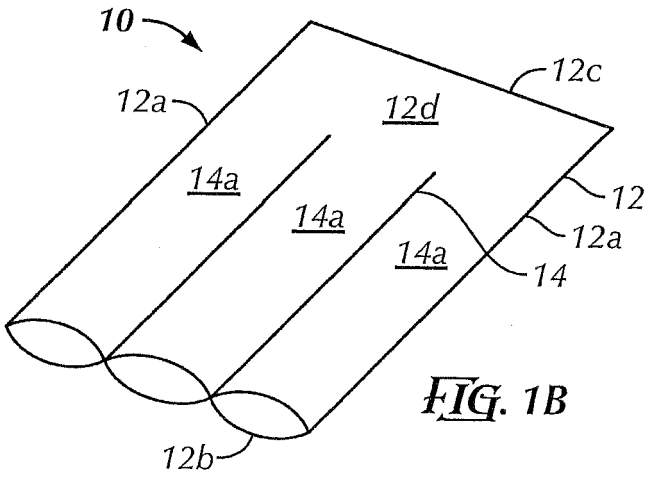
10
12a
12c
12d
14a
14a
14a
12
12a
14
12b

FIG. 1B

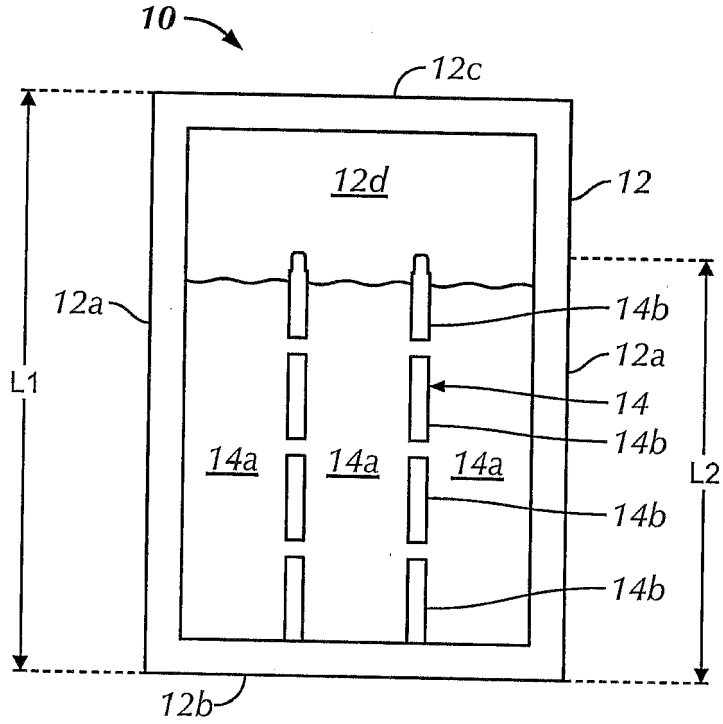
10
12c
12d
12
12a
14b
12a
14
14b
14a
14a
14a
14b
14b
L1
L2
12b

FIG. 2A

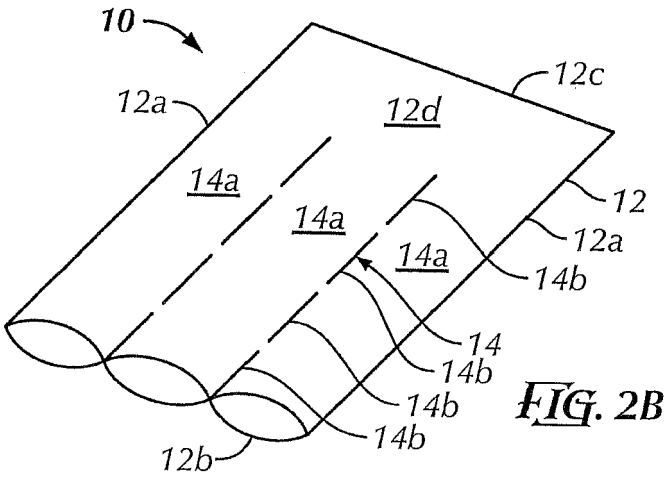
10
12a
12c
12d
14a
14a
14a
12
12a
14b
14
14b
14b
14b
12b

FIG. 2B

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EUROPEAN SEARCH REPORT

Application Number
EP 15 19 9501

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 March 2016	Fitterer, Johann

CATEGORY OF CITED DOCUMENTS

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