United States Patent [19]

Glas

[11] **3,891,138**

[45] **June 24, 1975**

[54] **MULTI-COMPARTMENT PACKAGE FOR REACTIVE COMPOSITIONS**

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[22] Filed: **Mar. 12, 1973**

[21] Appl. No.: **340,471**

[30] **Foreign Application Priority Data**

Mar. 16, 1972 Germany ..... 7209949[U]

[52] **U.S. Cl.** **229/56;** 206/484; 206/219

[51] **Int. Cl.**.. **B65d 31/12;** B65d 73/00; B65d 77/00

[58] **Field of Search** 206/484, 219; 229/56

[56] **References Cited**

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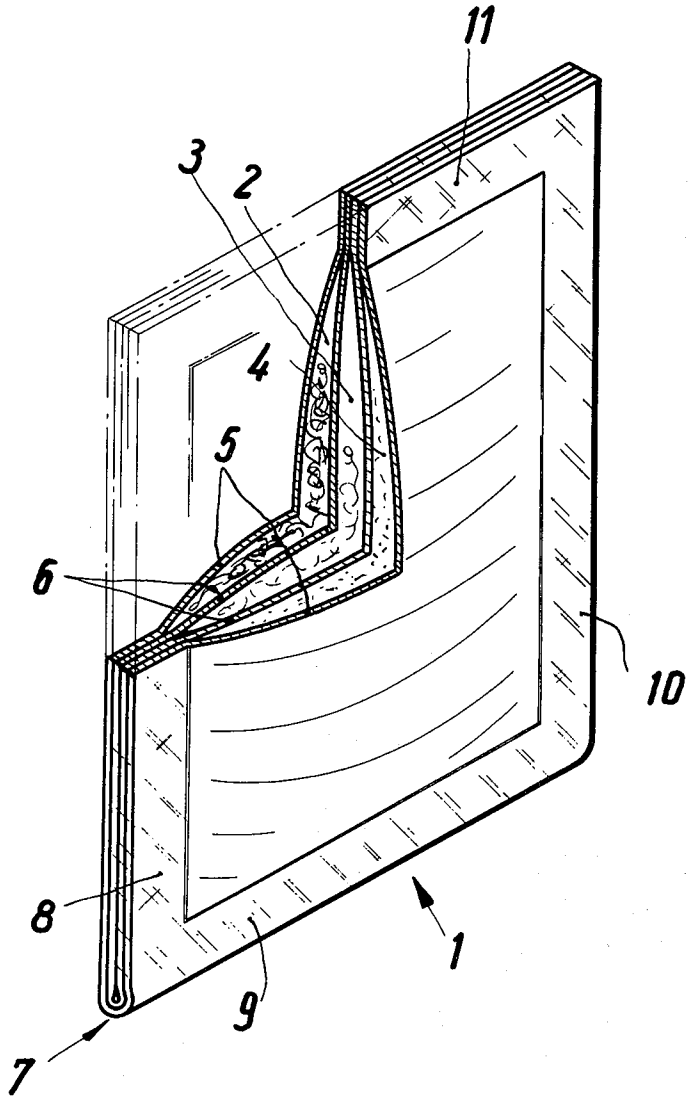
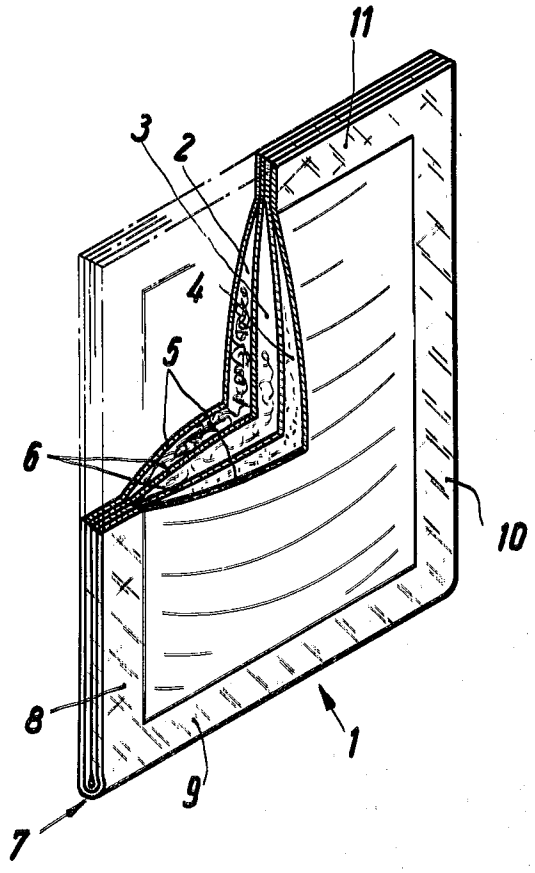
[57] **ABSTRACT**

A package or container with three independent compartments, sealed from each other, with the package being formed of two V-shaped webs of heat seal responsive packaging material with one inserted into the other and a heat seal is provided around the periphery of the package.

4 Claims, 1 Drawing Figure

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MULTI-COMPARTMENT PACKAGE FOR REACTIVE COMPOSITIONS

The invention relates generally to a package or container and, more particularly, to a package which has several compartments that are sealed off from each other to avoid contact between the respective contents.

In the photo-chemical industry, it is at times necessary to separate certain liquid and/or powder compositions until the time of use, either due to their rapid reaction when mixed or their limited shelf life when in a mixed condition. Examples of such photo-chemical materials are sulfate of methyl-p-aminophenol, sodium bisulfite, and sodium carbonate. The manufacture and filling of such multi-compartment packages or containers poses numerous problems when such process is to proceed with modern, ultra-high-speed packaging machinery. It becomes therefore important to minimize the number of steps required and yet to provide a package which will provide structural integrity between the individual compartments so as to preclude any premature mixing of reacting or reactive materials.

It is therefore the primary object of the present invention to provide a container which can be readily manufactured by means of automatic packaging machinery utilizing continuous webs of packaging material.

It is a further object of the present invention to provide a package having three separate compartments each containing a different material and in which all of the materials are separated, if desired, with liquid-tight integrity from any other material.

It is a still further object of the present invention to provide a container for reactive multi-component compositions which is composed of a packaging material which is heat seal responsive.

An aspect of the present invention resides in the provision of a package for reactive multi-component compositions having a multi-layer sandwich-like construction composed of a first heat seal responsive sheet-like packaging material initially folded lengthwise substantially in V-shape form and a second heat seal responsive material constituting a dividing wall also initially folded lengthwise in substantially V-shape form and disposed in substantially parallel relationship within the opening of the first packaging material. A first continuous seal extends all along the fold line or edge to bond or adhere together the adjacent surfaces of the first and second flexible material, a second and third continuous seal extends more or less at right angle to the first seal joining at one end the first seal and being axially spaced relative to each other, and a fourth seal extends substantially vertically spaced parallel to the first seal and between and connecting to the second and third seal with all of the seals being of substantially identical construction to effect the establishment of three sealed and separated compartments each containing a dissimilar reacting or reactive material.

For a better understanding of the present invention, together with other and further objects thereof, reference is had to the following description taken in connection with the accompanying drawing, and its scope will be pointed out in the appended claims.

In the drawing:

The single FIGURE drawing is a fragmentary, perspective view of the package or container including the inner compartments thereof.

Referring now to the drawing there is shown a package **1** composed of heat seal responsive packaging material such as sheet-like flexible plastic formed of cellophane, polyethylene, acetates, polyvinyl and the like. The prime criteria for selection of such materials being that they will lend themselves to the process of making the package herein described and in which the contents of the individual compartments which are described below will be compatible with the plastic sheet material.

The package **1** is composed initially of two webs (not shown as such) of packaging material **5** and **6,** respectively, which have been superimposed upon each other and which are either folded together along their longitudinal mid-center, or are folded independently along the center with the web **6** being inserted into web **5** in a substantially parallel relationship. The folding as above mentioned is to create webs of substantially V-shaped form so that one web may suitably be inserted into or superimposed upon the other. In any event, however, each such web is caused to have a fold line which assures a substantially symmetrical alignment between the two V-formations and a simplicity of operation.

In this position, the outer surfaces of the web **5** constitute, ultimately, the outer walls of the package **1** to be formed, whereas the inner walls **6** constitute dividing walls or diaphragms. In order to complete the package prior to filling the package with the content, a liquid tight seal **9** is established, if desired, by conventional heat seal jaws or the like (not shown), all along fold line **7** to bond or otherwise adhesively adhere together the adjacent surfaces on the bottom of the sheet-like walls **5** and **6** in order to press together these wall portions at the base of the "V" to establish the seal or seam **9** providing fluid tight integrity between the bonded or otherwise secured contact surfaces and along the bottom of the package as aforesaid.

In order to establish three compartments **2, 3** and **4,** separated by seals within the package, the webs **5, 6** of packaging material are then provided with a second and third seal **8** and **10,** respectively, which extend essentially at right angle to the first seal **9** with the seals **8** and **10** being suitably spaced lengthwise along the web of packaging material. It will be appreciated that the angularity may be varied, somewhat, without deviating significantly from the main aspect of the invention and, the term "at right angle" is to be interpreted and used in this context.

Automatic packaging machinery makes it possible to apply the seals or contact surfaces simultaneously. In any event, however, the prime purpose and intent of seals **8** and **10** is again the same as that of seal **9** to bond together along a relatively narrow seal or seam line the adjacent surfaces of the four walls or webs **5** and **6.**

The package is now ready for filling and thereafter a fourth seal **11** is applied at the top of the package, i.e., in a parallel relationship relative to the longitudinally extending seal **9** and vertically spaced therefrom. The seal **11** being again of the type as aforediscussed with respect to seals **8, 9** and **10** and jointly they circumscribe the area of the compartments **2, 3** and **4.** The foregoing establishes a completely closed, liquid-tight package with three separate compartments **2, 3** and **4,** and with each compartment having liquid-tight integrity relative to the other so that assimilation or a mixture between either powder or liquid materials within

the multi-compartments is prevented until the compartments are intentionally pierced for mixing.

The sub-dividing or cutting of the webs **5, 6** into individual packages **1,** can be accomplished either prior to the application of seals **8, 9** and **10** and before the individual compartments are filled, or after the compartments have been established by the application of heat seals **8, 9** and **10.**

While there have been described what are at present considered to be the preferred embodiments of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and it is aimed, therefore, in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A package for reactive multi-component compositions having a multi-layer sandwich-like construction composed of a first heat seal responsive packaging material initially folded lengthwise substantially in V-shape form, a second heat seal responsive material constituting a dividing wall also initially folded lengthwise in substantially V-shape form and disposed in substantially parallel relationship within the opening of the first packaging material;

a continuous first seal extending all along the fold line to bond or adhere together the adjacent surfaces at said fold line of the first and second flexible material;

a continuous second and third seal extending substantially at right angle to the first seal and axially spaced relative to each other joining at one end said first seal;

and a continuous fourth seal extending substantially vertically spaced parallel to said first seal and between and connecting to said second and third seal, all of said seals being of substantially identical construction and located as a margin along the periphery of the package; each of the packaging material surfaces facing each other establishing, except for the seal areas, a non-adhesive relationship to provide three separate and sealed compartments each for containing a dissimilar reacting material.

2. A package according to claim **1,** wherein the V-like shaped form of the first and the second material each has a folding edge proximate to the bottom of the V, and each said folding edges are in substantially abutting relationship.

3. A package according to claim **1,** wherein said first and second materials are formed from a continuous web of packaging material.

4. A package according to claim **1,** wherein said package consists of two outer walls formed of said first material and two inner walls of said dividing wall.

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