

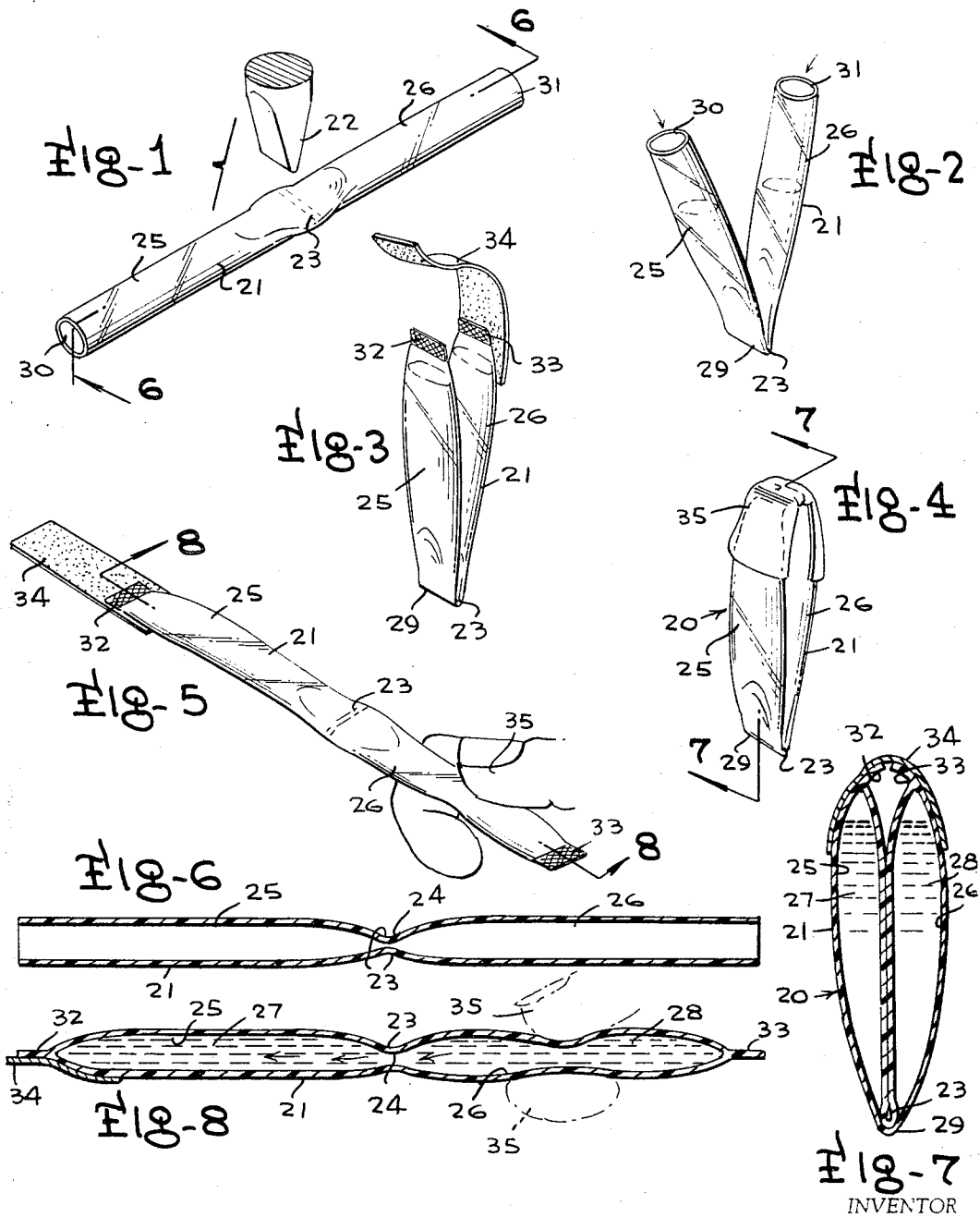
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BURST PACKAGE WITH FOLD SEAL

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1

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BURST PACKAGE WITH FOLD SEAL

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1 Claim

ABSTRACT OF THE DISCLOSURE

A package for separating two component substances or fluids such as epoxies and the like for storage, and wherein at the same time there is provided a mixing chamber for use when the materials are to be used, and wherein it is not necessary to open the package until the actual time of applying or using the materials or fluids.

There is provided a special fold seal for a package wherein two component fluids or materials such as epoxies can be separated for storage, and wherein the seal between the two components is not a faused bond, and wherein the tubing that is used is deformed in such a manner by means of ultrasonics or the like so that when folded at the joint through a sufficient angular distance, a tight mechanical joint is accomplished whereby the contents or substances on either side of the joint will not move from one chamber or area to the other as long as the package is kept in its folded condition.

Summary of the invention

In accordance with the present invention there is provided a burst package with a special fold seal which is especially suitable for separating two component fluids such as epoxies for storage, and wherein the materials are to be used, the materials can be readily intermixed, the package being provided with a restricted portion or throat which is not completely sealed, and wherein this restricted portion is adapted to be made by using ultrasonic energy, so that with the package in folded position about an axis extending through the restricted joint or portion, the contents in the two halves will not mix because a tight mechanical joint or separation will be provided between the two halves of the tube or package. Further, with the present invention mixing of the contents can be efficiently accomplished or brought about when desired by manual pressure, and wherein the package can be initially filled in a convenient and advantageous manner. In addition to the characteristics set forth above, there is provided a burst package which is of simplified construction whereby the same may be manufactured at a low cost but yet is very rugged and highly reliable in operation, or use.

Brief description of the drawings

FIGURE 1 is a perspective view illustrating the tube being deformed in an intermediate point by ultrasonic energy.

FIGURE 2 is a view showing the two halves bent up in position to permit filling of the halves with fluid.

FIGURE 3 is a view similar to FIGURE 2 but showing the next step in forming the package and with the outer ends of the package sealed or closed, and showing a portion of a closure member or tape being applied to hold the halves together.

FIGURE 4 is a perspective view illustrating the burst package in filled final position.

FIGURE 5 is a perspective view showing the package in open position and with the closure member or tape partially removed and illustrating the step of manually squeezing or applying pressure to a portion of the tube to mix the fluids together.

2

FIGURE 6 is a sectional view taken on the line 6—6 of FIGURE 1.

FIGURE 7 is a sectional view taken on the line 7—7 of FIGURE 4.

FIGURE 8 is a sectional view taken on the line 8—8 of FIGURE 5.

Description of the preferred embodiment

Attention is directed to the drawings wherein the numeral 20 indicates a burst package which may be made of a hollow body or tube 21, and the tube 21 may be made of flexible transparent plastic material. In FIGURE 1, the numeral 22 indicates a portion of an ultrasonic tool or member which is adapted to provide a deformation or restricted area or throat 23 which is not completely sealed or closed as indicated by the numeral 24 in FIGURES 6 and 8.

There is defined of provided on opposite sides of the restriction 23 two separate halves or compartments 25 and 26 for storage therein of two component substances or fluids such as the fluids 27 and 28, FIGURE 8. In FIGURE 7, the numeral 29 designates a mechanical seal or joint that results when the two halves 25 and 26 are moved together. As shown in FIGURE 2, initially the ends of the tube are open as at 30 and 31 so as to permit the halves or compartments 25 and 26 to be filled with the fluids 27 and 28. After these halves have been filled, the ends are adapted to be sealed or closed as indicated by the numerals 32 and 33. The numeral 34 indicates a closure member such as a removable tape which can be used for temporarily retaining or maintaining the halves 25 and 26 in their superposed position as shown in FIGURES 4 and 7, until the burst package is to be used.

From the foregoing, it will be seen that there has been provided a burst package which is especially suitable for holding or storing two separate fluids or substances such as the fluids 27 and 28. In use, with the parts arranged as shown in the drawings, initially the tube 21 may be in a position similar to that shown in FIGURE 1 so that a conventional ultrasonic tool 22 can be used to slightly deform or restrict a portion, such as an intermediate portion 23, of the tube to provide a restricted throat or section as indicated by the numeral 24, FIGURE 6. Then, the halves 25 and 26 can be folded upwardly about the throat or joint 24 to a position such as that shown in FIGURE 2 and because the ends 30 and 31 of the halves 25 and 26 are open, the fluids or substances can be loaded into or placed in the halves 25 and 26 from a suitable source of supply. Next, the end portions 30 and 31 are closed or sealed as indicated by the numerals 32 and 33, and this sealing or closing may be also accomplished by ultrasonic energy.

It is to be noted that when the halves 25 and 26 are moved to a position such as that shown in FIGURE 2, or to a position such as that shown in FIGURES 3, 4 and 7, that a mechanical bond is formed at the point 29 so that the fluids 27 and 28 in the halves or chambers 25 and 26 cannot intermix because the bond or joint 29 prevents any inadvertent flow of fluid 27 or 28 from one half to the other past the joint 29. With the halves 25 and 26 in superposed relation with respect to each other, and with the ends closed as at 32 and 33, and with the halves filled with fluid such as the fluid 27 and 28, any suitable means can be used for temporarily retaining or maintaining the halves adjacent to each other and, for example, for illustrative purposes, a retaining strip 34 may be extended across or around certain portions of the halves as shown in the drawings.

When it is desired to use the burst package and dispense the contents therefrom, it is only necessary to manually remove the retainer such as the strip 34 and then, as shown in FIGURES 5 and 8, finger pressure from the

user's fingers 35 can be applied to either or both of the halves 25 and 26, and this will cause the fluid from the pair of halves to intermix in the desired manner because with the parts in the position shown in FIGURES 5 and 8, the throat 24 will be in the form of a slight open passageway to permit flow of fluid from one half to the other as finger pressure is applied to the walls of the flexible tube or halves.

As previously stated, the tube is adapted to be made of a flexible plastic material which may be transparent so that the manual pressure from the fingers 35 will sufficiently deform the walls of the tube to cause the mixing action. After the mixing action has been accomplished, an end such as an end 32 or 33 can be opened or torn off or cut off whereby the mixed fluids can be caused to discharge out through such an open end onto the desired area or surface. In some instances, the package may be made so that an end may have a weakened portion that may rupture when sufficient manual pressure is applied to the tube to cause the contents to be discharged therefrom when manual pressure is applied to the device.

It is to be understood that the parts may be made of any suitable material and in different shapes or sizes.

It will be seen that there has been provided a package which has a special fold seal that divides it into two separate compartments for products which later are to be mixed together. While the drawings have illustrated one form of retainer in the form of a closure or strip 34 after the package is folded, it is to be understood that this is for illustrative purposes only and the present invention is not limited or restricted to any particular type of closure or strip since the two ends can be held together in any desired or suitable manner. The main feature of the present invention is the center fold and seal which actually does the separating.

The purpose for the seal of the present invention is to provide a package which will separate two component fluids such as epoxies and the like for storage and at the same time provide a mixing chamber so that when the materials are to be used, there is no necessity for opening the package until the time of application or the like. The seal in the vicinity of the throat 24 is not a fused bond. As shown in FIGURE 1, by using or utilizing a short burst of ultrasonics from a tool such as the tool 22, the tubing 21 is deformed slightly as at 23 in such a manner that when folded at this joint 23 through 90° or more, as shown in FIGURE 7, a tight mechanical joint is achieved or accomplished so that under pressure, the contents on either side of the joint 29 will not move from one chamber to the other as long as the package is kept folded. In addition, the position of the parts in the folded position can be maintained by a suitable retainer such as a piece of tape 34 for keeping the two halves of the package in its folded position, but it is to be understood that other methods of retaining the halves together can be used such as clips or the like. It is believed that ultrasonics give the best results in forming this type of joint.

To mix the contents, it is only necessary to unfold the two halves and squeeze the package sufficiently to assure adequate blending. Also, opening can be achieved by cutting open one of the two positively sealed ends and squeezing out the contents. Further, filling of the com-

ponents will be accomplished with the tubing already folded as shown in FIGURE 2 and the two open ends 30 and 31 in up position to receive the contents, and while in this position the positive end seals 32 and 33 will be made. It is to be noted that not all plastic materials will lend themselves to this type of fold seal in tubing since some materials tend to fuse together before they can be formed, and others are somewhat brittle and when folded develop small pinhole leaks. It has been found that one of the best materials for this purpose is Kel-F which is a chloro-trifluoro ethylene type of compound.

While the present invention has been described previously for use with epoxies, it is to be understood that the package of the present invention can be used for various other materials as desired, and hence is not limited to the use of such epoxies.

Although the invention has been herein shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention.

We claim:

1. A package divided into two compartments for products such as epoxies which later are to be mixed together, said package consisting of a hollow tubular member made of flexible transparent plastic material, said tubular member being deformed intermediate its ends by ultrasonic energy to provide a deformation and restricted area which is not a fused bond, and whereby there is defined and provided on opposite sides of said restricted area two separate compartments storing therein the two component fluids, said compartments being folded towards each other about an axis extending through the restricted area whereby the walls of said restricted area on opposite sides of the tubular member are in contact thereby mechanically sealing one compartment from the other, the outer ends of the tubular member being sealed, and removable retaining means secured to said outer ends selectively holding the compartments together in folded position, and whereby when the package is to be used, the retaining means is removed from at least one of the compartments, and manual pressure is applied to the package to cause the fluids to intermix and flow through the deformed area, so that by next opening a portion of the package, the intermixed fluids can be dispensed from the package.

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