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R. D. LOWRY ET AL

3,076,542

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Filed Dec. 30, 1960

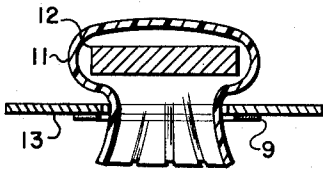


FIG. 1

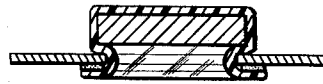


FIG. 2

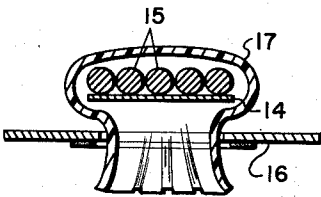


FIG. 3

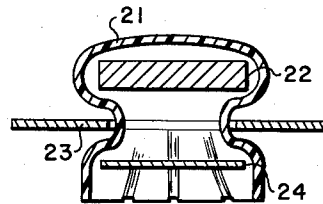


FIG. 4



FIG. 5

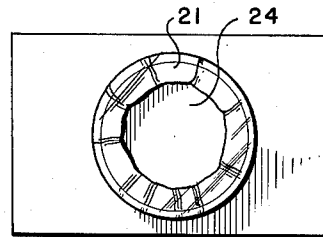


FIG. 6

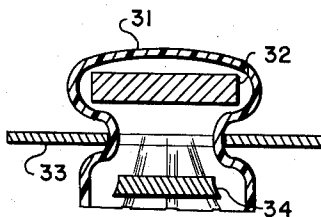


FIG. 7



FIG. 8

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6 Claims. (Cl. 206—78)

This invention relates to a package and to a method of packaging and more particularly to the packaging of an object within a sheet of heat shrinkable film which is attached to or locked beneath a stiff sheet of backing material.

It is well known to package objects between a backing board and a rigid transparent, thermoplastic bubble or blister. The so-called blister package provides a transparent protective covering for the enclosed object while the backing board provides further physical protection and also serves to carry messages and decorations. Blister packages, however, require relatively thick plastic materials to form the blister, which plastic materials must be preformed and are relatively expensive. A problem also arises in attaching the bubble or blister to the backing material, and in most cases it is necessary to perform a separate loading and gluing operation. Our invention produces a package which possesses all of the advantages of the blister package and none of its disadvantages.

Accordingly it is an object of this invention to provide a novel package in which the object is placed upon a stiff backing board and covered with a transparent plastic covering.

It is also an object of this invention to provide a novel package that is simple to construct and requires inexpensive materials for its manufacture.

A further object is to provide a package which affords the appeal and protection of a blister package but does not require a thick preformed plastic blister.

Another object is to provide a package in which no adhesive or mechanical fastening is required on the front or upper surface of said package.

It is also an object to provide a package wherein the product is covered with a transparent plastic material which closely conforms to the product and which material also serves to attach the product to the backing board.

These and other objects of the present invention will appear more fully in the following specification and claims taken in conjunction with the accompanying drawings in which:

FIGURES 1 and 2 are cross-sectional elevational views showing the formation of the package of this invention.

FIGURE 3 is a cross-sectional elevational view of the package of this invention modified to accommodate small objects.

FIGURES 4 and 5 are cross-sectional elevational views showing the formation of a modified package of this invention.

FIGURE 6 is a bottom plan view of the package of FIGURE 5.

FIGURES 7 and 8 are cross-sectional elevational views showing the formation of another modified package of this invention.

Referring to FIGURES 1 and 2, there is shown a flexible sheet of heat shrinkable film 11, a product 12 to be packaged, and a backing board 13. The backing board is a rectangular section of stiff paperboard which has a circular opening or aperture cut out at approximately the center of the backing board which opening is smaller than the product being packaged. The sheet of heat shrinkable film 11 is placed over the top of the product and drawn down and around the product 12. The edges of said film sheet extending below the product are gathered and drawn through the opening in the backing board.

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The product is pulled over the opening in the backing board as the film edges are drawn through the opening. The excess film below the backing board is then secured to the underside of the backing board by means of an adhesive. Heat is applied to that portion of the sheet of film covering the product causing it to shrink producing a tight, wrinkle-free package.

When it is desired to package a number of small objects, which objects might pass through the opening in the backing board, a supplementary backing board 14, larger than the opening, may be employed as shown in FIGURE 3. The supplementary backing board is placed under the objects 15 and above the opening in the backing board 16. The film sheet 17, as before, is placed over and drawn about the objects and about the supplementary backing board and the peripheral edges of the film sheet extending below the product and supplementary backing board are drawn through the opening in the backing board and secured to the underside thereof and that portion of the film covering the objects is heat shrunk.

While the above examples employed adhesives to secure the film to the underside of the backing board, it is also possible to employ mechanical fastenings, heat seals, etc. to secure the film.

FIGURES 4, 5 and 6 disclose a modified package of this invention which does not require adhesives or mechanical fastenings to secure the shrinkable film to the underside of the backing board. A sheet of heat shrinkable film 21 is wrapped over and around the sides of the product 22 and the film edges extending below the product are drawn through the aperture of the backing board 23 as before. A locking member in the form of a disc of backing material 24 slightly larger than the aperture is positioned within the film edges and against the undersurface of the backing board so as to cover the aperture. The film extending below the disc is then shrunk by the application of heat. As the film shrinks the peripheral edge of the film sheet becomes smaller causing the film to be drawn inwardly over and against the undersurface of the disc as is shown in FIGURE 6. The film edges thereby become locked about the disc holding the disc in place and against the backing board. The portion of the film surrounding the product is lightly shrunk to tighten the package and remove any wrinkles therefrom.

Another variation of the package of this invention is shown in FIGURES 7 and 8 wherein the locking member shown in the previous example has been modified. In place of the disc there is employed a shallow plug which fits tightly into the aperture of the backing board. The plug is designed so that it is small enough at one end to pass into the aperture of the backing board but large enough at the opposite end so that it will not pass completely through. It is desirable that the plug be shaped so that it may be forced into the aperture and be held in place by means of a friction fit. In FIGURES 7 and 8 a sheet of heat shrinkable film 31 is placed over the product 32 and the edges of the film are drawn around and under the product and through the aperture in a backing board 33. The film material drawn through the aperture is then flared out evenly around the edge of the aperture and under the backing board. A plug 34, having an outwardly flaring sidewall, is then inserted into the aperture locking the film between the edge of the aperture and the plug. The top portion of the film covering the product is lightly shrunk to produce a neat, tight package. While not necessary, the film extending below the backing board may be heat shrunk causing the film edges to be drawn over and against the undersurface of the plug and to become locked thereto. Additionally, as the film shrinks it also thickens resulting in a thickened portion of film being located at the undersurface of the backing board adjacent to the line where the plug enters

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the aperture in the backing board. This thickened area functions to act as a further aid in preventing the film from being drawn through the aperture.

It is possible to perform the shrink operations in the above package assembly in one single step by passing the package through a hot air shrink tunnel. It is possible to perform this overall shrink in one operation because the film is held tightly in the aperture of the backing board by the plug.

The stiff backing material employed as the backing board may have any geometric shape and may be composed of any material that has sufficient rigidity and will not be adversely affected by the temperatures employed in shrinking the film material. The opening in the backing board while disclosed in the examples as circular may have other geometric shapes, e.g., rectangular, etc. The locking member and plug may be modified to conform to the geometric shape of the opening in the backing board or may have a different shape from said opening so long as the locking member is greater in at least one dimension than said opening and so long as the plug may wedge into said opening.

Any heat shrinkable material that will not melt or decompose under the temperatures required for shrinking may be used. Examples of such materials include but are not limited to irradiated, biaxially oriented polyethylene, such as that described in U.S. Patent 2,877,500 to Rainer et al., oriented polypropylene, oriented copolymers of vinylidene chloride, etc.

The invention described in detail in the foregoing specifications is subject to changes and modifications without departing from the principle and spirit thereof. The terminology used is for purpose of description and not of limitation, the scope of the invention being defined in the claims.

We claim:

1. Package comprising a backing board having an opening therein, product being packaged larger than said opening and positioned over said opening, a limp sheet of thermoplastic film covering and tightly conforming to that portion of the product that extends above the backing board, the peripheral edges of said limp sheet being drawn over said product and through the said opening and then tightly drawn around the edge of a second piece of backing material which is larger in at least one dimension than said opening and is positioned adjacent the undersurface of said backing board covering said opening, the peripheral edge of the film sheet having a smaller perimeter than the largest perimeter of the second piece of backing material.

2. A package which comprises a backing board having an opening therein, a product being packaged larger than said opening and positioned over said opening, a limp sheet of thermoplastic film covering and tightly conforming to that portion of the product that extends above the backing board, the peripheral edges of said limp sheet being drawn over said product and through the opening

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in said backing board and a plug of rigid material which fits tightly into said opening from the undersurface of the backing board said plug wedging and locking the film drawn through said opening against the perimeter of the opening.

3. Package according to claim 2 wherein the peripheral film edge is drawn over the undersurface of said plug and has a smaller perimeter than the largest perimeter of said plug.

4. Package comprising a backing board having an opening therein, a second piece of backing board larger than said opening and positioned over said opening, a plurality of small objects being packaged supported on said second piece of backing board, a limp sheet of thermoplastic film covering said objects and tightly conforming thereto, the peripheral edges of said limp sheet being drawn over said objects and said second backing board, through the opening in said first backing board and then tightly drawn around the edge of a third piece of backing material which is larger in at least one dimension than said opening and is positioned adjacent the undersurface of said first backing board covering said opening, the peripheral edge of the film sheet having a smaller perimeter than the largest perimeter of the third piece of backing material.

5. Package comprising a backing board having an opening therein, a second piece of backing board larger than said opening and positioned over said opening, a plurality of small objects being packaged supported on said second piece of backing board, a limp sheet of thermoplastic film covering said objects and tightly conforming thereto, the peripheral edges of said limp sheet being drawn over said objects and said second backing board and through the opening in said first backing board, and a plug of rigid material which fits tightly into said opening from the undersurface of the first backing board, said plug wedging and locking the film drawn through said opening against the perimeter of the opening.

6. Package according to claim 5 wherein the peripheral film edge is drawn over the undersurface of said plug and has a smaller perimeter than the largest perimeter of said plug.

References Cited in the file of this patent

UNITED STATES PATENTS

2,757,793	Deitz	Aug. 7, 1956
2,836,941	Hultkrans	June 3, 1958
2,931,493	Pfohl	Apr. 5, 1960
2,931,494	Pfohl	Apr. 5, 1960
2,931,495	Stratton	Apr. 5, 1960
2,950,004	Acomb	Aug. 23, 1960
2,967,383	Rumsey	June 10, 1961
3,018,879	Crane	Jan. 30, 1962

FOREIGN PATENTS

128,611	Switzerland	Nov. 1, 1928
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