Aug. 8, 1967 G. L. MEYERS 3,334,734

PACKAGE WITH CONTENTS HOLDING MEANS

Filed Nov. 16, 1964 2 Sheets-Sheet 1

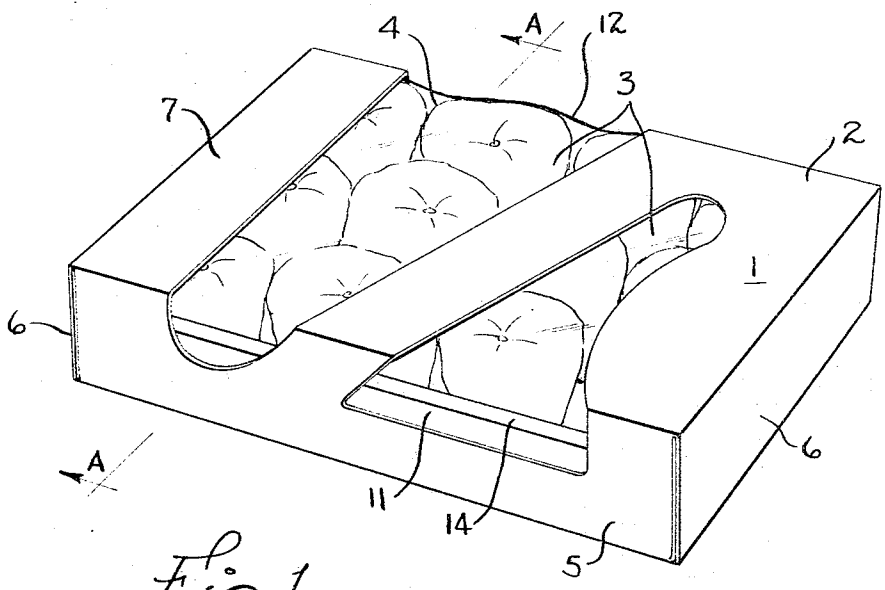

Fig. 1

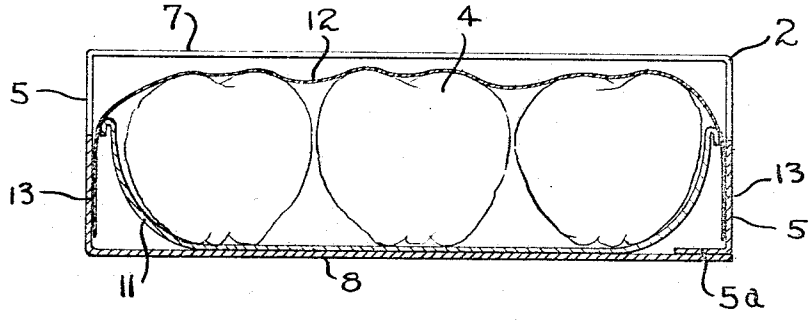

Fig. 2

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2 Sheets-Sheet 2

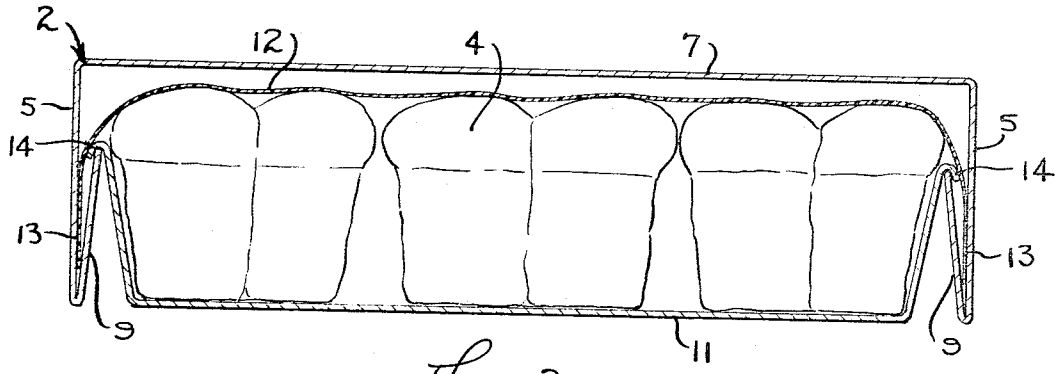

Fig. 3

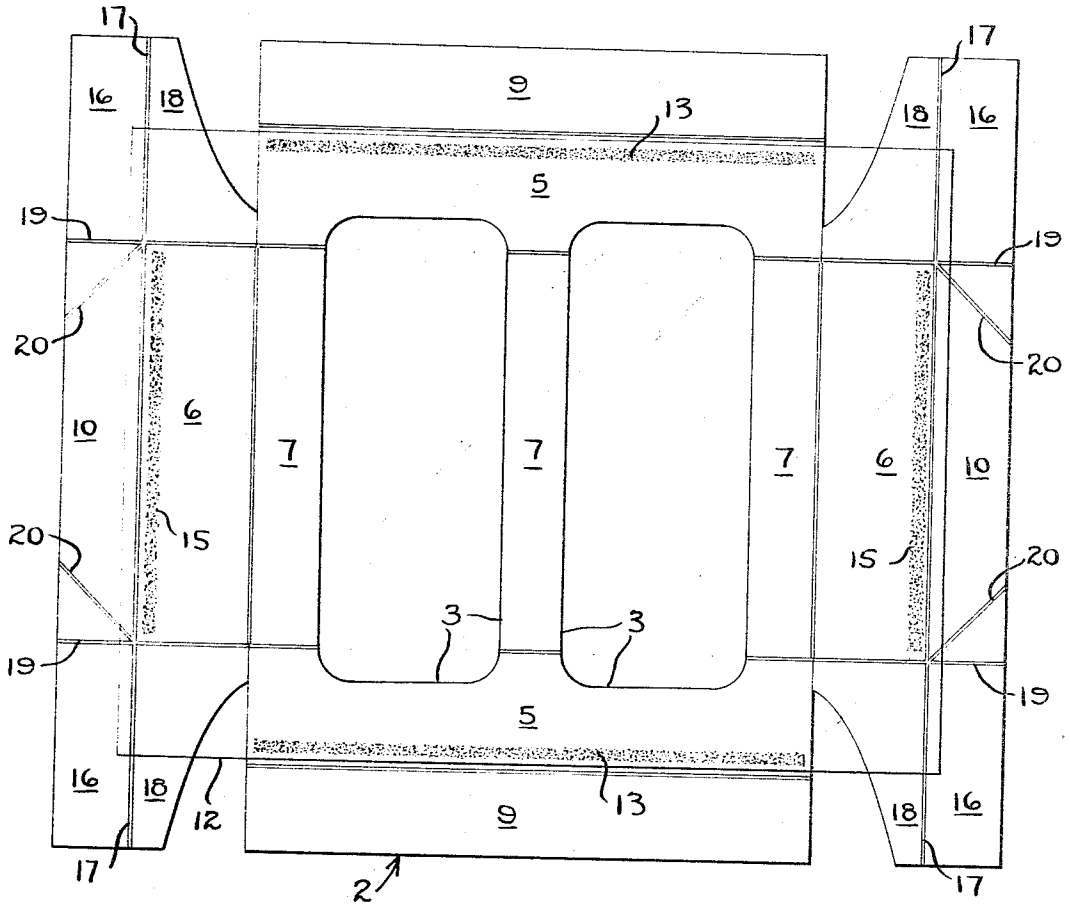

Fig. 4

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United States Patent Office 3,334,734 Patented Aug. 8, 1967

3,334,734

PACKAGE WITH CONTENTS HOLDING MEANS

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Filed Nov. 16, 1964, Ser. No. 411,506
6 Claims. (Cl. 206—45.14)

This invention relates to packages which employ heat shrinkable films in combination with semi-rigid packaging materials.

Heat shrinkable films enjoy a wide current use in the packaging of a large variety of articles. Such films have been used by themselves to wrap various food and other products, and have also been used as a wrapping for trays and the like or backing boards to form what are commonly referred to as "blister packages." Shrink film packages of this nature afford good protection from the atmosphere to food products and tamperproofness to other types of packages, but ordinarily do not protect the product against crushing. Cartons constructed from paperboard or metal foil or like materials protect the contents against crushing, but such cartons suffer from the limitation that the contents generally are loose within the carton and thus, unless the somewhat expensive measure of providing a product holding or cushioning device within the carton is resorted to, the contents are subject to damage due to colliding with the sides of the carton during handling.

The present invention provides the advantages of both shrink film packages and semi-rigid cartons while avoiding the aforesaid disadvantages of each. By the use of shrink film within a paperboard carton to cradle the product therein, it has been found that packages can be provided which protect the articles contained therein from the atmosphere, offer protection against crushing, are stackable, and can be handled easily without fear of damage to the contents due to collision with the walls of the package. These packages have the further advantage that the contents of the unopened package can be viewed. To accommodate certain goods, such as fresh produce, the packages of the present invention can be constructed to provide adequate ventilation to the contents while at the same time holding them firmly within the package.

The invention will be more fully understood with reference to the accompanying drawings in which:

FIGURE 1 is a perspective view of a package;

FIGURE 2 is a cross-sectional view along line A—A of FIGURE 1 showing one embodiment of the invention;

FIGURE 3 is a cross-sectional view along line A—A of FIGURE 1 showing a different embodiment of the invention; and

FIGURE 4 is a plan view of a paperboard blank with shrink film attached thereto for use in the embodiment shown in FIGURE 3.

Referring more specifically to the drawings, in FIGURE 1 there is seen package **1** which comprises a cover **2**, formed from paperboard or the like, having openings **3** therein for viewing the product **4**, which may be fresh produce, baked goods or the like. Cover **2** comprises side panels **5**, end panels **6**, top panel **7**, and a bottom panel **8** (FIGURE 2). In the alternative construction shown in FIGURES 3 and 4, the bottom panel may be eliminated and the cover provided instead with tray engaging flaps **9** and **10**. Product **4** is contained in a receptacle or tray **11** which may be constructed from metal foil, paperboard, molded plastics, or combinations of these materials. Looped over the product **4** and tray **11** is a transparent heat shrinkable thermoplastic film **12**, which is attached to the side walls **5** of carton **2** by an adhesive **13** (best seen in FIGURES 2–4) located below the top of the tray **11** or the product contained

therein. In general, the points at which the film is attached to the carton should be so positioned that some portion of the contents including the tray lies between the points, so that shrinking of the film will cause the same to exert pressure on the contents. The film **12** in the unshrunken condition is of sufficient length that the product can easily be inserted under the loop formed thereby, and on application of heat will shrink sufficiently to hold firmly but gently the product within the carton.

In the embodiment of this invention shown in FIGURE 2, tray **11** rests on the bottom panel **8** of cover **2**. In this embodiment cover **2** is in the form of a conventional rectangular carton having openings **3** in the top panel which may also extend into the side panels **5** to provide for easy viewing of the contents. The cover **2** is formed from paperboard in accordance with conventional converting procedures wherein the blank is formed by cutting and the fold lines dividing the blank into panels are formed by scoring the paperboard along the desired lines. To form the package, the sheet of shrinkable film **12** is adhered to the inner surfaces of side panels **5** while the cover is in the form of a flat blank. The blank is then formed into an open-ended shell by adhering flap **5A** to bottom panel **8** as shown in FIGURE 2. The particular configuration used for the cover is a matter of choice, as many other carton configurations, well known to those skilled in the art could be substituted for that shown in FIGURE 2. The receptacle **11** with the product therein is then inserted in the cover beneath the film as shown (FIGURE 2). The assembly is then subjected to heat to shrink the film **12**. Shrinking of the film causes the tray and contents to be firmly held against the bottom panel. The end panels **6** are then secured either by means of locking flaps or adhesive, as desired. If desired, the film may also be adhered to the cover end panels in the embodiment of FIGURE 2. In this case, shrinking of the film **12** will cause the end panels to be closed, and will hold the same in a closed position until the carton is opened, thus eliminating the need for locking flaps or other securing means for the ends of the carton. It will also be apparent that where a bottom panel is provided on the cover as shown in FIGURE 2, tray **11** could be eliminated if the product is of the nature such that no tray is needed. The use of a tray will, of course, be desirable in the case of produce of the type shown in FIGURE 2 or in the case of baked goods or the like, which would tend to stain the bottom of the carton with grease if there were direct contact between the product and the carton.

In the alternative form of the invention, illustrated in FIGURES 3 and 4, tray **11** is supplied with a flange **14** which projects outwardly from the top of the side and end walls of the tray. Cover **2** is formed without a bottom panel, but instead is provided with flaps **9** and **10** designed to engage flange **14**. As seen in FIGURE 4, film **12** is affixed to the end panels of the carton by means of adhesive **15** as well as to the side panels **5** by adhesive **13**. The package is then formed by placing the goods in the tray, placing the cover and film over the tray and contents and folding the side panels **5**, end panels **6**, and tray engaging flaps **9**, **10** around the tray into the positions shown in FIGURES 1 and 3. In setting up cover **2**, flaps **10** and their lateral extensions **16** are first folded down along score lines **17**. Extensions **16** and the corresponding extensions **18** of end panels **6** are then folded inwardly, toward the side panels **5** along score lines **19**. Score lines **20** permit flaps **10** to flex inwardly to engage flanges **14**. Flaps **9** are folded over the extensions **17**, **18** to engage the flange **14** along the sides of the tray. It will be apparent that the shrinking of the film **12** will cause both the side and end panels to be drawn in toward the tray, and flaps **9** and **10** to be pressed into

firm engagement with flange **14** to form the completed package.

As seen in FIGURES 2 and 3, the side and walls of the cover are of greater length than the height of the combined tray and product so that the top panel **15** of the cover is spaced a short distance above the top of the product. This construction enables the filled packages to be stacked without danger of damage to the contents. The amount of space can be reduced from that shown in the drawings, if desired, by using a slightly greater length of film with correspondingly higher contents, or by reducing the height of the walls of the carton.

The source of heat employed to shrink the film **12** is preferably a hot air blower, which may be used in conjunction with a conveyor used to carry the packages therepast. A gas temperature, usually approximately 500° F., is selected which is suitable for shrinking the particular film composition used. The optimum temperature will also depend upon the temperature used in orienting the film. The hot air should be applied for a length of time sufficient to firmly secure the contents within the package and to remove any wrinkles in the film. The openings **3** provide means for readily directing a blast of hot air on film **12** after the contents have been placed thereunder. If desired, further openings could be located in the sides or end panels for introducing hot air to shrink the film.

The film used in practicing the present invention can be selected from among any of the commercially available heat-shrinkable films formed from such polymers as polyethylene, polyethylene terephthalate, rubber hydrochoride, polyvinyl chloride, or other suitable elastomers which have been deformed and have the property of returning to their original or substantially original dimensions under heat treatment. In the embodiment of FIGURES 3 and 4 it is desirable to employ a biaxially oriented elastomer in order that the flaps on all four sides of the carton will be drawn in firmly. In the embodiment of FIGURE 2 a monoaxially oriented film could also be used if desired to provide for shrinking in the crosswise direction only.

While certain specific embodiments of the invention have been disclosed for the sake of clarity, the invention is not limited thereto, as various equivalents will be apparent to those skilled in the art.

I claim:

1. A windowed display package comprising the combination of a product receiving tray and a cover for enclosing the tray, the tray having a bottom wall and upstanding side and end walls, a flange projecting outwardly from the top of the side and end walls of the tray, the cover having a top panel and depending side and end walls, means connected to the lower edge of at least two of the depending cover walls engaging the tray flange and supporting the tray within the cover, and a sheet of heat shrinkable material secured to the cover and overlying the upper end of the tray whereby the sheet when shrunk retains the tray securely within the cover.

2. A package comprising the combination of a product receiving tray and a cover for enclosing the tray, the tray having a bottom wall and upstanding side and end walls, the cover having a top panel and depending side and end walls, a bottom panel secured to the end and side walls receiving and supporting the product receiving tray, and a sheet of heat shrinkable material secured to the side and end walls of the cover on opposed sides whereby the sheet when shrunk retains the tray firmly in contact with the bottom panel and whereby shrinking said sheet closes said end walls.

3. A container for receiving a product containing tray comprising the combination of a cover for enclosing the tray, the tray having a bottom wall and upstanding side and end walls, the cover having a top panel and depending side and end walls, a bottom panel secured to the end and side walls for receiving and supporting the product receiving tray, and a sheet of heat shrinkable material secured to the end walls of the cover on opposed sides whereby shrinking said material closes said end walls and retains the tray firmly in contact with the bottom panel.

4. A windowed display package comprising the combination of a product receiving tray and a cover for enclosing the tray, the tray having a bottom wall and upstanding side and end walls, a flange projecting outwardly from the top of the side and end walls of the tray, the cover having a top panel and depending side and end walls, means connected to the lower edge of the depending cover walls engaging the tray flange and supporting the tray within the cover, and means cooperating with said cover and overlying the upper end of the tray for limiting upward movement of the tray within the cover with respect to the means for engaging and supporting the tray.

5. In a windowed display package including a tray for receiving a product, which tray includes an outwardly directed peripheral flange the improvement which comprises a cover for enclosing the tray, the cover having a top panel and depending side and end walls, means connected to the lower edge of the depending cover walls for engaging the tray flange and for supporting the tray within the cover, and a sheet of heat shrinkable material secured to the cover for overlying the upper end of the tray whereby the sheet when shrunk cooperates with said engaging and supporting means for retaining the tray securely within the cover.

6. A package comprising the combination of a product receiving tray and a cover for enclosing the tray, the tray having a bottom wall and upstanding side and end walls, the cover having a top panel and depending side and end walls, a bottom panel secured to the side and end walls receiving and supporting the product receiving tray, and a sheet of heat shrinkable material secured to the side walls of the cover on opposed sides whereby the sheet when shrunk retains the tray firmly in contact with the bottom panel.

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