Dec. 4, 1951 H. JENETT 2,577,249

PACKAGING MATERIAL AND METHOD OF PACKAGING

Filed April 19, 1947

Fig. 1.

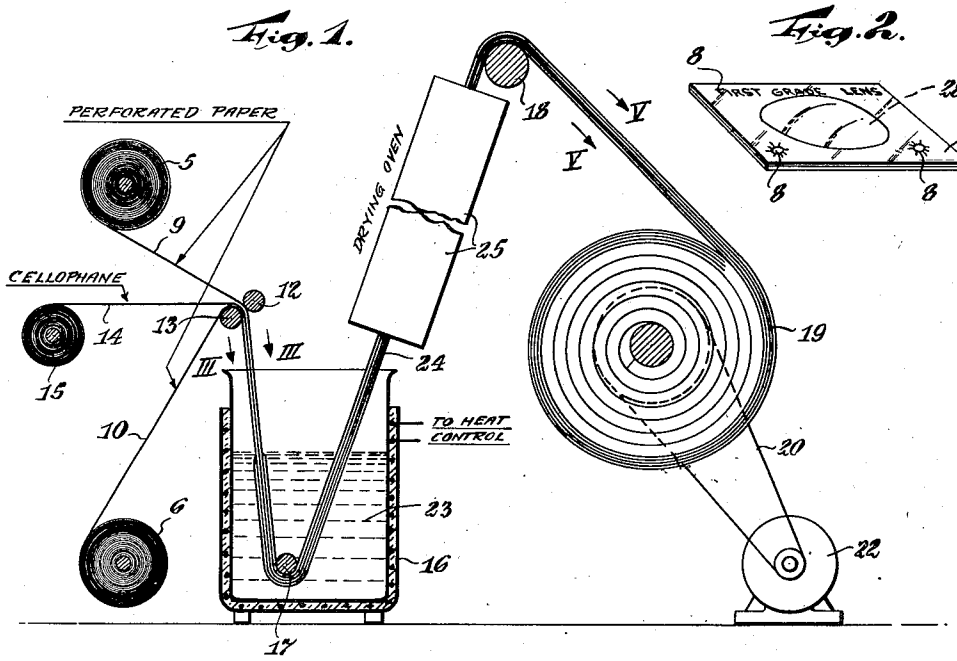


Fig. 2.

Fig. 3.

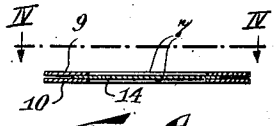


Fig. 5.

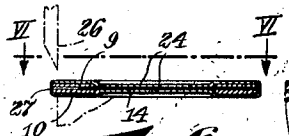


Fig. 8.

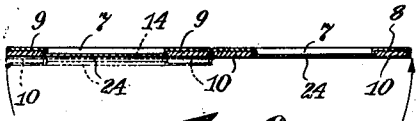


Fig. 4.

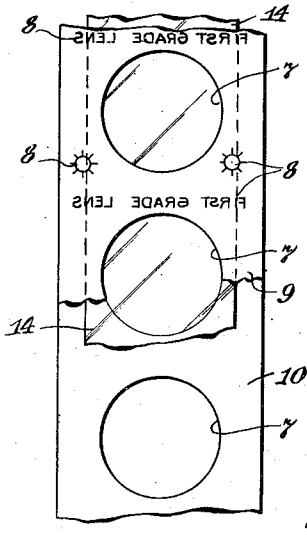


Fig. 6.

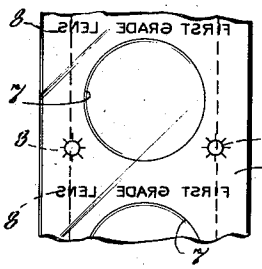


Fig. 9.

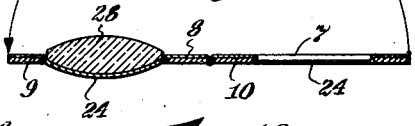


Fig. 10.

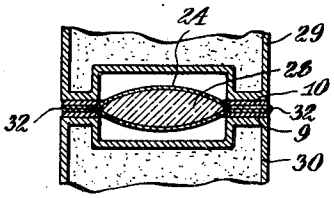
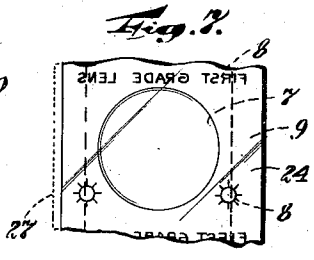


Fig. 7.



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PACKAGING MATERIAL AND METHOD OF PACKAGING

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Application April 19, 1947, Serial No. 742,761

8 Claims. (Cl. 93—3)

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This invention relates to the art of packaging, and aims to provide a simple, inexpensive display and protective package for a variety of articles, characterized by its low cost and by its ability to display the packaged article to the eye while preserving it in its protective envelope which may be suitably decorated to set off the article in a most desirable manner. The invention also includes the method of producing the package.

Transparent packages have met with great favor recently because of their ability to display packaged articles to the customer while protecting them from handling. They have been made largely by wrapping the articles in preformed sheets or bags of plastic material, and then sealing the edges of the sheets around the articles. Because of the nature of the process, it has been necessary to use sheets of sufficient body so they can be handled and sealed (by heat, solvent or adhesive) without frequent breakage or wrinkling. This generally makes the package rather expensive, particularly when really moisture-resistant protective films are used (like polyvinyl chloride, vinyl chloride-vinyl acetate copolymers, polyvinylidene chloride, polystyrene, Pliofilm [cyclized rubber hydrocarbon polymers] polyethylene and others). In general, film thicknesses of the order of 3 to 10 mils are required to obtain the necessary properties in the sheet.

Another disadvantage of the present method is the difficulty of decorating some of the plastic materials—such materials require special finishes and printing inks to get color or indicia to adhere to them.

It has been proposed to prepare transparent packages by casting their films of protective material about the articles to be packaged, in order to reduce the amount of material necessary to protect the packaged articles. Much thinner films can be prepared by such a method, but the final products, although cheaper, have many disadvantages. One is the fact that they cannot be decorated or printed by conventional means. A second difficulty with many products is that the article is too closely encased by the plastic. While this difficulty may be avoided with objects of irregular shape by using filming materials such as are disclosed in my co-pending applications, Serial No. 620,413, filed October 4, 1945 (now abandoned), and Serial No. 628,381, filed November 13, 1945 (now abandoned), flat thin objects such as razor blades cannot be easily removed even from the easiest stripping films in which they are embedded. And finally, many articles are sensitive to heat and solvents, one or the other of which must be used during the operations of casting the film.

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It is the primary object of my invention to provide a new type of package which not only has all the advantages of the present day expensive package prepared from sheets of plastic, but is very much reduced in cost, and avoids the present day printing and decorating difficulties encountered with plastic sheets.

Another object is to approximate the cost of packages prepared by casting films on the articles to be packaged, while at the same time avoiding the difficulties of too solid an embedding, poor decorating qualities and exposure of the article to be packaged to casting conditions.

With these and other objects in view, I have invented a new type of package, and a method of producing it, in which the packaged article is loosely encased in an envelope comprising two films of moisture-resistant plastic which are 2 mils or less in thickness immediately about the object, and which are completely sealed to each other in the periphery, to give a completely sealed package.

The invention can be best understood by reference to the accompanying drawing, in which:

Fig. 1 is a schematic illustration partly in cross-section of an apparatus for producing a packaging base in accordance with the present invention,

Fig. 2 is a perspective view of a completely packaged article in accordance with the present invention,

Fig. 3 is a cross-sectional view taken on the line III—III of Fig. 1,

Fig. 4 is a plan view and partly in cross-section as viewed from the line IV—IV of Fig. 3,

Fig. 5 is a cross-sectional view taken on the line V—V of Fig. 1,

Fig. 6 is a plan view taken from the line VI—VI of Fig. 5,

Fig. 7 is a view similar to Fig. 6 but showing the packaging base after cutting of the longitudinal edge thereof,

Fig. 8 is a cross-sectional view of the packaging base or envelope of the present invention in its open or article filling position,

Fig. 9 is a view similar to Fig. 8 but showing the article or object in place preparatory to closing the packaged article, and

Fig. 10 is a cross-sectional view of the finished packaged article as shown in Fig. 2 in position just after sealing the edge of the package.

Referring now to the drawing in detail, the package of the present invention may be formed

by an apparatus, such as shown in Fig. 1, wherein two rolls of light-weight cardboard or non-absorbent paper 5 and 6 are provided, which have been previously punched, so as to provide openings 7 therein slightly larger than the article to be encased in the finished package, and the punched paper may also carry on its surface any desired printing or advertising matter 8. The webs 9 and 10 from the rolls 5 and 6 and with the openings therein in alignment, are fed between a pair of rollers 12 and 13 together with a web 14, of cellophane or the like, sandwiched therebetween with the latter feeding from a roll 15 and being of slightly narrower width than the paper webs 9 and 10.

This laminated web of paper-cellophane-paper, as shown in Figs. 3 and 4, is then fed downwardly of a container or tank 16, around a roller 17 provided adjacent the bottom of the tank, and thence upwardly around a roller 18, where it is then wound upon a spool or the like 19 which is rotated by any suitable means, such as a belt 20 driven by an electric motor 22. Disposed within the tank 16 is a bath 23 of plastic which may be in the form of a heated thermoplastic, a solution of a plastic in a solvent, a hot reversibly gellable composition such as described in my co-pending application Serial No. 628,331, filed November 13, 1945, or in any other form from which a film can be laid down.

During the upward travel of the laminated web from the bath 23, the plastic congeals into a film 24 completely surrounding the laminated web of paper-cellophane-paper and if the bath happens to be a solution of a plastic in a solvent, the coated web may pass through a dryer 25 to expedite evaporation of the solvent and congealing of the film 24. The spool 19 thus carries a web of a coated packaging base such as shown in Figs. 5 and 6 and may be sold in this form as an article of commerce although I prefer to further condition the package base for the customer-packer.

To this end the laminated web is next unwound from the spool 19 and rewound upon a similar spool. However, during such transfer one edge passes beneath a knife or the like 26 (Fig. 5), which trims off one edge 27 of the plastic film 24 and the corresponding portion of both webs of paper 9 and 10, as shown by the dotted line in Fig. 7, leaving the cut edge open. The web thus on the final spool and ready for the manufacturer-packager is as shown in Fig. 7. It consists of the film of plastic 24 which may range from .0001 to .002 inch in thickness, supported by the paper webs 9 and 10, the paper having pairs of article-receiving-openings 7 in register with each other and separated by the web of cellophane 14. Also, the outer surface of the paper webs 9 and 10 bears printed decorations, marks, or advertising 8, in accordance with the desires of each customer and all such printed matter is clearly visible through the thin plastic film.

In Figs. 8, 9 and 10 there is shown the manner in which the customer-packager forms the completely packaged article. First the laminated web, as shown in Fig. 7, with its cut edge is unwound from the spool and cut into lengths sufficient for only one article, or as many as desired, thus providing three cut edges with the plastic film serving as a hinge at the uncut edge. The laminated web is then unfolded by flapping the bottom leaf down and around the uncut plastic edge as a hinge, and thus from left to right as shown by the arrow in Fig. 8, so that the plastic film 14 is uppermost and the paper webs 9 and 10 below, and the cellophane web 14 removed.

The article to be packaged, and shown in the drawing as an optical lens 28, is laid on the unsupported film 24 bridging the opening 7 in the paper web 9. Because of the thinness of such plastic film 24 it is deformed, as shown in Fig. 9, thus closely fitting the lower surface of the article 28. The web is then closed in the direction shown by the arrow in Fig. 9, which brings the films 24, together with the thin film 24 bridging the opening 7 in the paper web 10, in alignment with the article 28 with the unsupported film being likewise deformed and closely fitting the upper surface of the article 28, and positioning the paper webs 9 and 10 on the outside of the laminate as shown in Fig. 10.

The closed article-bearing package is then ready for sealing which may be done by subjecting the open edges to heat and pressure, as from a pair of dies 29 and 30 as shown in Fig. 10, which produces a heat seal at the edges 32. During this pressing operation, the print or decoration 8 is tightly bonded to the plastic, by virtue of the solvent action of the hot plastic, so that when the paper webs 9 and 10 are stripped away in the final operation, a printed or decorated plastic package encasing the article is obtained as shown in Fig. 2. Also in some instances and depending upon the particular composition of the plastic film 24, the edges may be sealed by the application of a solvent to the open edges which dissolves the film edges sufficiently to bond the same together.

It should be noted that because of the lack of a paper backing in the areas of the article-bearing openings 7, there is no laminating action of the plastic at such surface—hence a pocket is left in which the article is held in place entirely by the normal frictional forces. Thus the plastic strips away cleanly and without effort; because the skin is much thinner than in packages made from preformed sheets, the package is much easier to strip from the article.

Obviously, there are many variations possible in the process of the present invention. The choice of paper for the backing is limited only by the necessity for its stripping clearly from the plastic. Glazed kraft, glassine and even highly sized and calendered printing papers are satisfactory. Also, the casting of the film about the paper can be done in any fashion, so long as the two webs are separated by a facing which prevents the plastic from merging the two webs through the cut-out openings. Instead of utilizing two rolls of paper as shown, it is equally feasible to employ a single roll provided with laterally aligned cut-out and fold the paper, in which event the folded edge would be subsequently cut along with the plastic edge in the edge trimming operation. When desired the cut-outs may be staggered so that none overlap with the paper acting as a back-up agent, although such instance is believed to be rare when a construction of this type would be desired.

It should thus become obvious to those skilled in the art that an inexpensive plastic package is herein provided wherein the thinness thereof is of the order of 2 mils or less and which is readily strippable from the article. Also, an exceptionally economical method of producing such package is herein shown and described and wherein the package can be formed to accommodate substantially any desired shaped article,

such as medicinal products in capsule or pill form, razor blades, etc. Moreover, the package of the present invention is particularly adapted to the packaging of foodstuffs which cannot be subjected to heat or solvents. On flat articles films as thin as .1 mil may be cast, which are just thick enough to support the article in the cut-outs and which will distend or stretch to tightly pack the article.

Although one specific embodiment of the present invention has been shown and described, it is to be understood that other modifications thereof may be made without departing from the spirit and scope of the appended claims.

I claim:

1. A packaging material comprising a supporting base formed of strips of laminae having registerable cut-out portions therein and separated by a sandwiched strip of removable laminate, and a film of sealable plastic material superimposed on said supporting base and completely covering the latter and bridging said cut-out portions.

2. A packaging material comprising a supporting base formed of strips of laminae having registerable cut-out article receiving portions therein and separated by a sandwiched strip of removable laminate, a film of sealable plastic material superimposed on said supporting base and covering the latter and bridging said cut-out portions, and a cut edge on said base to facilitate unfolding of said laminae and removal of said sandwiched removable laminate, as well as insertion of articles to be packaged in the cut-out article receiving portions.

3. A packaging material comprising a supporting base formed of strips of laminae having registerable cut-out article receiving portions therein and separated by a sandwiched strip of removable laminate, printing matter carried on the outside surface of said supporting base, and a film of sealable plastic material superimposed on said supporting base and covering the latter and bridging said cut-out portions.

4. A packaging material comprising a supporting base formed of strips of laminae having registerable cut-out article receiving portions therein and separated by a sandwiched removable laminate, printing matter carried on the outside surface of said supporting base, a film of sealable plastic material superimposed on said supporting base and covering the latter and bridging said cut-out portions, and a cut edge on said base to facilitate unfolding of said laminae and removal of said sandwiched removable laminate, as well as insertion of articles to be packaged in the cut-out article receiving portions.

5. The method of preparing packaging material which comprises dieing out a supporting base to provide registering coaxially aligned article holding cut-outs, backing up the cut-outs with a sandwiched solvent impermeable membrane, and casting a film of plastic over the supporting base with its sandwiched membrane to provide a cut-out base overlaid with a continuous plastic film for the reception of packaged articles.

6. The method of preparing packaging material which comprises dieing out a supporting base to provide registering coaxially aligned article holding cut-outs, backing up the cut-outs with a sandwiched solvent impermeable membrane,

casting a film of plastic over the supporting base with its sandwiched membrane to provide a cut-out base overlaid with a continuous plastic film, and cutting one edge of the supporting base to facilitate removal of the sandwiched membrane and insertion of the articles to be packaged in the cut-outs for support by the plastic film.

7. A method of preparing and packaging material which comprises dieing out a supporting base to provide a laminae of registering coaxially aligned article holding cut-outs, backing up the cut-outs with a sandwiched solvent impermeable membranous laminate, casting a film of plastic over the supporting base with its sandwiched membranous laminate to provide a cut-out base overlaid with a continuous plastic film, cutting the edge of the supporting base and unfolding the laminae to facilitate removal of the sandwiched membranous laminate, inserting the articles to be packaged on the film formed across the cut-outs in the base, folding the laminae with the plastic surfaces in contact to enclose the inserted articles, sealing the plastic film around the articles encased therein, and stripping the supporting base laminae with the cut-out portions from the outside of the completely sealed envelope.

8. A method of preparing and packaging material which comprises dieing out a supporting base provided with printed matter on the surface thereof to provide a laminae of registering coaxially aligned article holding cut-outs, backing up the cut-outs with a sandwiched solvent impermeable membranous laminate, casting a film of plastic over the supporting base with its sandwiched membranous laminate to provide a cut-out base overlaid with a continuous plastic film, cutting the edge of the supporting base and unfolding the laminae about its uncut edge as a hinge to facilitate removal of the sandwiched membranous laminate, inserting the articles to be packaged on the film formed across the cut-outs in the base, folding the laminae with the plastic surfaces in contact to enclose the inserted articles and dispose the supporting base laminae on the exterior, heat sealing the plastic film under pressure around the articles encased therein to transpose the printed matter from the supporting base to the plastic film, and stripping the supporting base laminae with the cut-out portions from the outside of the completely sealed envelope while leaving the printed matter on the film of the envelope.

HENRY JENETT.

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