

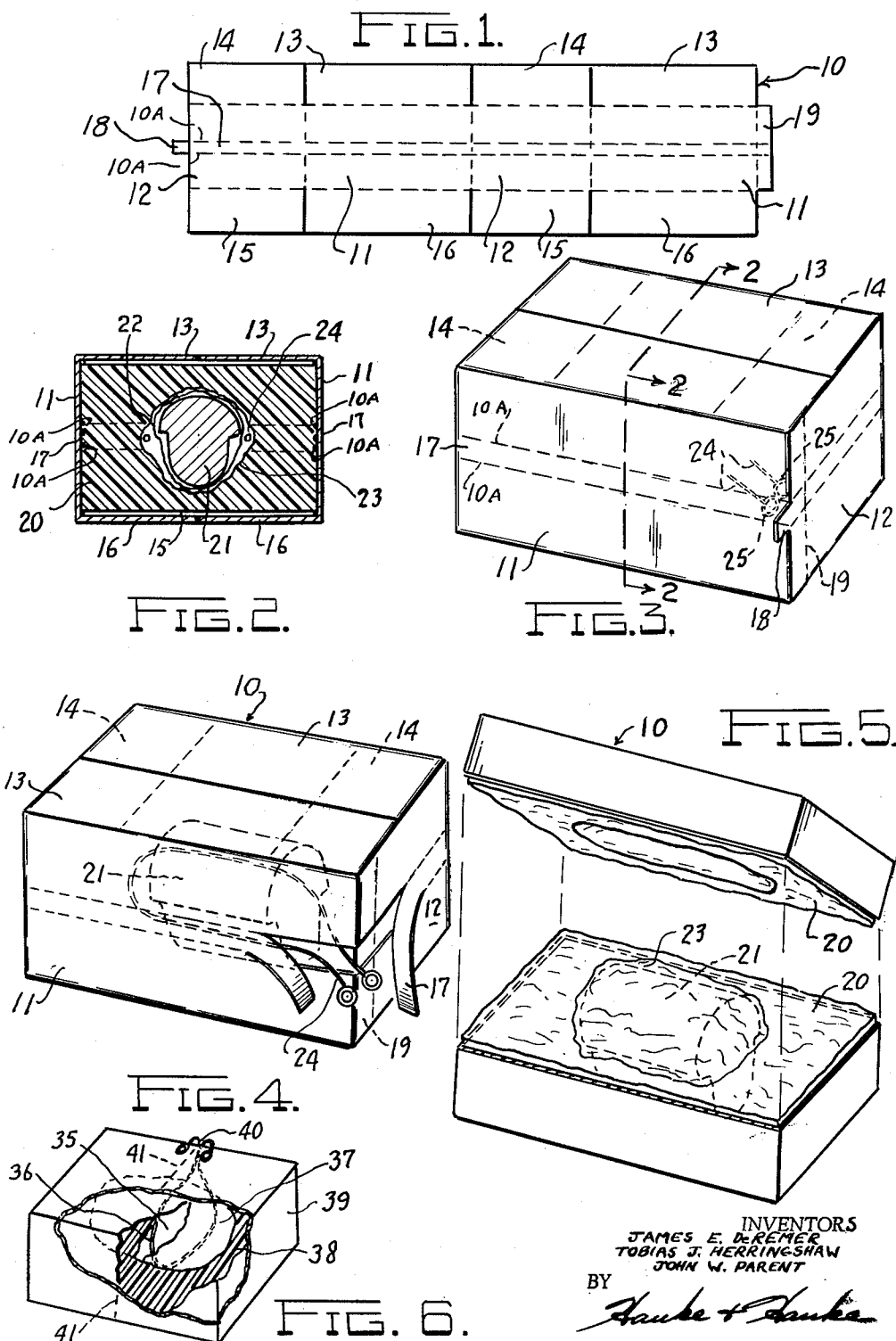
March 10, 1964

J. E. DE REMER ETAL

3,124,246

PACKAGING CONTAINER

Filed March 12, 1962



INVENTORS
 JAMES E. DE REMER
 TOBIAS J. HERRINGSHAW
 JOHN W. PARENT
 BY
Hauke & Hauke

1

3,124,246

PACKAGING CONTAINER

James E. De Remer, Tobias J. Herringshaw, and John W. Parent, Toledo, Ohio, assignors to Continental Aviation and Engineering Corporation, Detroit, Mich., a corporation of Virginia

Filed Mar. 12, 1962, Ser. No. 179,115

11 Claims. (Cl. 206-56)

This invention relates to packaging and more particularly to a reusable carton for use with a rigid plastic cellular foam which completely encompasses the article being packaged.

Our copending application, Ser. No. 143,210, entitled "Packaging" describes a new and useful method of packaging articles which utilizes a rigid plastic or cellular foam material such as polyurethane. Therein is described the inherent advantages of such a package over the metal containers and cardboard cartons now being used. Foremost among these advantages are the low initial cost of such a package and the fact that such a package can be reused innumerable times with little rehabilitation costs. Further, such a package is very light weight when compared to metal containers for the same article and thus its use substantially reduces freight costs.

The several types of corrugated or hardboard containers disclosed in our copending application are satisfactory for many uses but have been found to have several disadvantages which are overcome by the present invention. The construction of several of these packages previously disclosed provided rather large areas of carton overlapping which makes them somewhat more costly to produce than would be the case if the areas of overlapping could be diminished. Also packaging and unpacking requires the handling of rather bulky and cumbersome pieces of cardboard material since a large part of the carton is intended in the copending disclosure to be separated from the plastic foam. This separation exposes the foam to damage which would not occur if the cardboard were left adhered to the foam and thereby limits somewhat the re-usability of the package.

It is an object of the present invention to provide an inexpensive package for objects of any size or shape by providing a carton which can be re-used almost indefinitely in combination with a rigid plastic cellular foam material and with negligible rehabilitation costs.

It is another object of the present invention to reduce the manufacturing costs of a carton to be used with a rigid plastic foam material by diminishing the areas of overlapping material when such a carton is assembled.

It is yet another object of the present invention to make unpacking and re-packaging of foam packaged articles an easier task by providing a carton having a circumferential tear strip.

It is still another object of the present invention to increase the number of times a rigid plastic foam package may be re-used by providing means for protecting the plastic foam during unpacking and repackaging.

Still further objects and advantages will readily occur to one skilled in the art to which the present invention pertains upon reference to the following drawings in which like characters refer to like parts throughout the several views and in which:

FIG. 1 is a top plan view of a carton embodying the present invention illustrating the carton prior to folding and assembly.

FIG. 2 is a cross-sectional view illustrating the carton of the present invention being used in combination with a rigid plastic foam to package an article.

FIG. 3 is a perspective view of a preferred container embodying the present invention.

FIG. 4 is a perspective view similar to FIG. 3 but illustrating a stage of unpacking, and

2

FIG. 5 is a perspective view illustrating yet another stage of unpacking; and

FIG. 6 is a perspective view illustrating yet another preferred embodiment of the present invention.

Referring now to the drawings for a more detailed description of the present invention, FIG. 1 shows a preferred corrugated carton 10 as having side panels 11, end panels 12, top flaps 13-14 and bottom flaps 15-16. The inner ply of the side panels 11 and end panels 12 are preferably perforated on the spaced parallel lines 10A to provide a circumferential tear strip 17 terminating at one end in an exteriorly extending tab portion 18. This permits the strip 17 to be easily separated from the carton 10 while at the same time the outer ply of the carton 10 affords protection from moisture entering the interior of the carton 10.

A corner flap 19 is preferably provided on the lateral edge of one of the side panels 11.

The carton 10 is assembled by folding it along the fold lines indicated by the dotted lines in FIG. 1. The flap 19 is secured by glue or other means to the inner surface of side panel 11 as can best be seen in FIG. 3. The bottom flaps 15-16 and the top flaps 13-14 will be folded in as is customary with conventional cartons.

A plastic foam material 20 is introduced into the carton 10 until a portion of the bottom has been filled. The foam material is preferably introduced by spraying and any of the many foaming systems now available may be employed for this purpose. Rigid cellular polyurethane foam is preferred since it hardens into a rigid yet resilient substance. The foam is allowed to set until it has become resilient but before it has reached a stage of rigidity. The exact amount of time needed for this step depends upon many variables including the mixture employed.

As best seen in FIG. 2 an article 21 which is to be packaged is preferably wrapped in two pieces of flexible material such as heavy wrapping paper. The inside wrapping is designated as 22 and the outside 23. A thin wire 24, preferably having grasping means 25 on one or both ends is provided between the layers 22-23 and completely encircles the article 21. The grasping means 25 are disposed exteriorly of the wrappings 22-23.

The article 21 including the wrappings 22-23 and the wire 24 is placed upon the resilient foam retained in the carton 10. Care should be taken at this point to be sure the wire 24 is contained in a plane which intersects the side panels 11 and end panels 12 somewhere between the perforations which form the tear strip 17. The foam 20 will conform to the configuration of the article 21 and will adhere to the outer wrapper 23.

The tear strip 17 is preferably waxed or otherwise coated with a parting agent to prevent the foam plastic from adhering to it. The grasping means 25 are taped or otherwise secured to the interior surface of the carton 10 preferably to flap 19 closely adjacent or on the tear strip 17.

The remaining portion of the carton 10 is then filled with foam.

When the article 21 is to be removed from the package the tear strip 17 is separated from the carton 10 by pulling on the tab portion 18. This separates the carton 10 into two portions as can best be seen in FIGS. 4-5. Pulling the exposed grasping means 25 will cause the wire 24 to cut and separate the foam 20 into two sections. The outside wrapper 23 will stick to the foam and thus the article 21 can be easily removed from these sections and will still be protected by the inside wrapper 22. The foam also adheres to the inside of the carton.

The impressions left in the two foam sections become paper lined molds into which other articles similarly prepared with a cutting wire may be placed for further

shipping. Adhesives may be used to seal the sections together. The tear strip 17 may be taped back into place or replaced by tape and the package is ready to be shipped again.

It is apparent that a carton has been described which is constructed to provide a convenient means of opening a package utilizing a rigid plastic foam. Further the carton permits the package to be re-used indefinitely and affords protection to the foam material during this re-use.

The use of the tear strip, leaving the bulk of the carton in place and adhered to the foam, provides adequate surfaces of cardboard at the edges to which most types of tape will readily adhere.

Another modification of the invention useful where the carton material is not too heavy is shown in FIG. 6, which is suitably cut away to illustrate the various material layers. The wrapped article 35 has a circumferentially disposed cutting wire 36, all of which is wrapped in an outer paper layer 37. The foam is shown at 38 and the carton at 39. In this modification no tear strip is provided but instead the wires 36 extend outward through the corner of the carton 39 as at 40, with grasping means 41 disposed exteriorly of the carton. These may be taped in place.

To open this package, the grasping means are merely pulled so that the wire 36 will cut the paper 37, foam 38 and carton 39 along a dotted line 41 preferably printed on the outer surface. The entire package is thus divided, and for reuse the halves may be simply taped together after adhesive is applied to the mating foam surfaces.

It will be apparent to one skilled in the art to which the invention pertains that various changes and modifications may be made herein without departing from the spirit of the invention or the scope of the appended claims.

We claim:

1. A packaging means comprising
 - (a) a carton provided with a readily removable circumferential strip,
 - (b) an article to be packaged carried in said carton,
 - (c) a rigid plastic foam in said carton and encasing said article,
 - (d) a wire disposed intermediate said foam and said article and completely encompassing said article,
 - (e) said wire being disposed in a plane substantially common to a plane containing the longitudinal axis of said strip.
2. The packaging means as defined in claim 1 and in which the inner surface of said strip is coated with a parting agent to prevent said foam from adhering to said strip.
3. The packaging means as defined in claim 1 and in which
 - (a) the ends of said wire extend radially outwardly through said foam to a point closely adjacent a portion of said tear strip,
 - (b) grasping means being provided on at least one end of said wire.
4. The packaging means as defined in claim 3 and in which said strip is provided with an exteriorly extending tab portion.
5. The packaging means as defined in claim 4 and in which said grasping means are removably affixed to the inner surface of said strip at a point closely adjacent said tab portion.
6. A method of packaging an article in a carton comprising
 - (a) perforating the inner surface of said carton in a pair of parallel circumferential lines to form a tear strip,
 - (b) encircling said article with at least one thin wire,
 - (c) emplacing said article in said carton spaced from all walls thereof and in a position such that said wire is in a plane substantially common to the plane

containing the longitudinal axis of said tear strip, (d) affixing the ends of said wire to said tear strip, and (e) foaming said article in place with an enveloping layer of plastic in a quantity sufficient to fill the space remaining in said carton between its walls and said article.

7. A method of packaging an article in a carton comprising

- (a) perforating the inner surface of said carton in a pair of parallel circumferential lines to form a tear strip,
- (b) wrapping said article with a flexible material,
- (c) completely encircling said wrapped article with at least one thin wire,
- (d) wrapping said article with a second piece of flexible material capable of being cut or torn by said wire,
- (e) extending the ends of said wire exteriorly of said second wrapping,
- (f) emplacing said article in said carton spaced from all walls thereof and in a position such that said wire is in a plane substantially common to the plane containing the longitudinal axis of said tear strip,
- (g) affixing the ends of said wire to said tear strip, and
- (h) foaming said article in place with an enveloping layer of plastic in a quantity sufficient to fill the space remaining in said carton between its walls and said article.

8. A packaging means comprising

- (a) a carton,
- (b) an article to be packaged carried in said carton,
- (c) a rigid plastic foam in said carton and encasing said article,
- (d) a wire disposed intermediate said foam and said article and completely encompassing said article, and
- (e) the ends of said wire extending outwardly through said foam and said carton.

9. The packaging means as defined in claim 8 and in which grasping means are provided on at least one end of said wire.

10. A method of packaging an article in a carton comprising,

- (a) completely encircling said article with at least one thin wire,
- (b) emplacing said article in said carton spaced from all walls thereof,
- (c) extending the ends of said wire through said carton to be disposed exteriorly thereof,
- (d) foaming said article in place with an enveloping layer of plastic in a quantity sufficient to fill the space remaining in said carton between its walls and said article.

11. A packaging means comprising

- (a) a carton provided with a readily removable circumferential strip,
- (b) an article to be packaged carried in said carton,
- (c) a rigid plastic foam in said carton and encasing said article, and
- (d) the inner surface of said strip being provided with a parting agent whereby said plastic foam is prevented from adhering to said strip.

References Cited in the file of this patent

UNITED STATES PATENTS

1,978,741	Delpech et al. -----	Oct. 30, 1934
2,320,143	Johnson -----	May 25, 1943
2,579,131	Tinsley -----	Dec. 18, 1951
2,679,349	Mullinix -----	May 25, 1954
2,822,118	Will -----	Feb. 4, 1958
2,866,304	Koerber -----	Dec. 30, 1958
2,923,110	Tamarin -----	Feb. 2, 1960
2,985,287	Schulz -----	May 23, 1961