Feb. 4, 1969

K. E. BOLEN

3,425,542

PACKAGING

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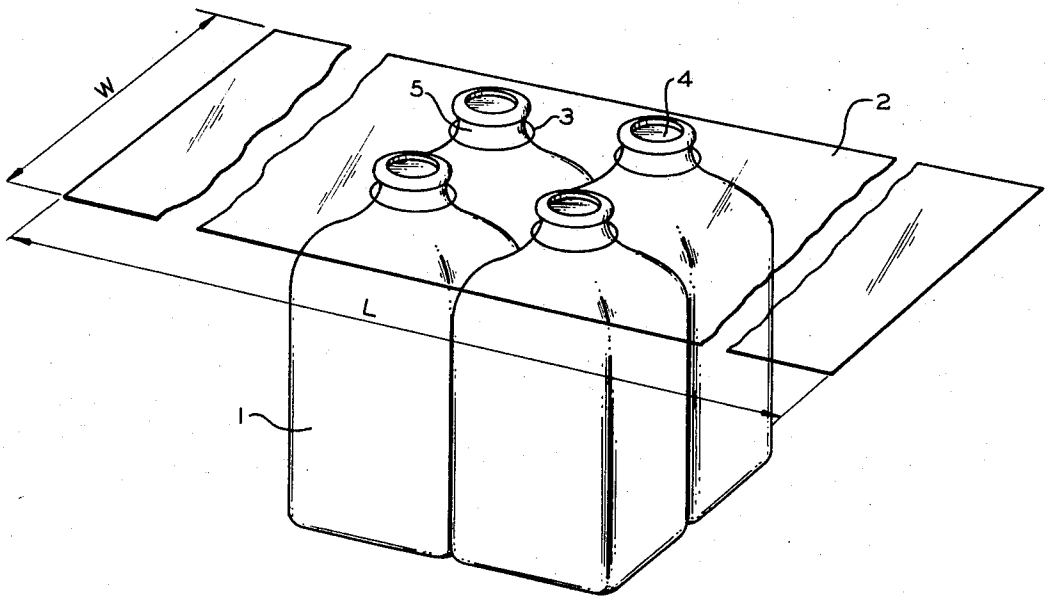

FIG. 1

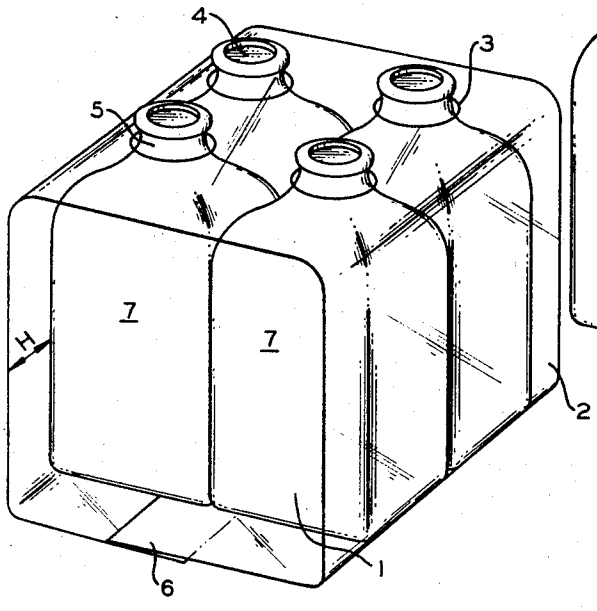

FIG. 2

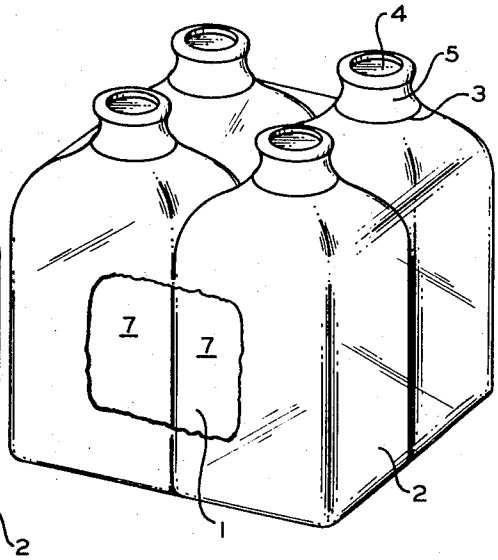

FIG. 3

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PACKAGING

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Int. Cl. B65d 85/62, 65/16; B65b 63/02

This invention relates to a new and improved method for packaging a plurality of articles. In another aspect this invention relates to a new and improved package.

Although this invention will be disclosed, for the sake of clarity, with respect to bottles having elongated neck portions defining an inlet and/or outlet aperture, it should be noted at the outset that this invention is broadly applicable to other containers, articles and the like at least some of which have substantially elongated portions similar in external configuration, although not internal function, to the neck of a bottle.

Heretofore, bottles, e.g. those employed for carrying milk, have been transported in groups in many types of cases made out of one or more materials. Since these cases carry large numbers of bottles, e.g. four gallons, nine half-gallons, sixteen quarts and the like, they are built in a sturdy manner to have an actual service life on the order of three to 10 years. However, being well built and extremely functional as carrying cases the loss thereof through pilferage and other similar causes reduces the average predictable useful life sometimes to a period of no more than 6 months. To combat this loss searches have been conducted to develop disposable outer containers. To this end corrugated boxes, brown paper and the like have been employed but generally prove to be unsatisfactory due to rapid deterioration in use and in the humidity of refrigerators or similar coolers.

It has now been found that a durable, simple, and inexpensive case for a multiplicity of articles, e.g. bottles, having the above-described elongate portions is provided when a section of shrinkable material having apertures therein adapted to pass over said elongate portions is placed about a plurality of said articles, the articles preferably being in a substantially contiguous relationship, the ends of said sections which meet along the sides of said articles are sealed to form a substantially cylindrical casing, and the section is then shrunk about said articles.

This method produces a package wherein the apertured section of shrinkable material is disposed about the articles in a shrunken state so that the elongate portions of those articles extend through the apertures and the open ends of the substantially cylindrical casing at least partially cover the sides of those articles which were adjacent those open ends.

Further, an intermediate package is formed which could be employed per se after the apertured section of shrunken material has been placed around the articles and the ends of the section which meet along the sides of the articles sealed thereby disposing the articles in a substantially cylindrical casing.

As used above and in the remainder of this disclosure, unless stated otherwise, the term "substantially cylindrical" is used to denote a hollow configuration having open opposite ends and a substantially closed surface therebetween, the closed section of which can be circular, elliptical, rectangular, square, triangular, or have any other desired shape be it regular or irregular in nature.

Accordingly, it is an object of this invention to provide a new and improved method for packaging articles. It is another object of this invention to provide a new and improved package for a plurality of articles.

Other aspects, objects and the several advantages of this invention will be readily apparent to those skilled in the art from the description, the drawings, and the appended claims.

FIGURE 1 shows the first step of a method according to this invention.

FIGURE 2 shows the second step of the method of FIGURE 1.

FIGURE 3 shows a finished package according to this invention.

FIGURE 1 shows a plurality of plastic milk bottles disposed in adjacent side by side relationship in a manner similar to which they would be carried in known cases. Disposed over bottles **1** is a film **2** of shrinkable material, e.g. oriented polyethylene 8 mils in thickness, which has cut therein four apertures, all of which are spaced so as to coincide and pass over the tops **4** of bottles **1**. Thus, film **2** is disposed below tops **4** and about the necks of elongate portions **5** of bottles **1**. Film **2** has a length L sufficient so that the film can be wrapped about bottles **1** and meet on the underside thereof with sufficient overlapping to allow for sealing. The width W of film **2** should extend beyond the outer exposed side of bottles **1** for from about 10 to about 50 percent of the side by side width of bottles **1**. In other words, this overhang denoted H (FIGURE 2) is from about 10 to about 50 percent of the width of two of bottles **1**. For example, the overhang H can be, but is not limited to, from 1 to 4 inches in extent when each bottle **1** has a width of from 5 to 6 inches.

The thickness of film **2** can vary widely depending upon the articles being encased, the composition of the film itself, the length and width dimensions of the film, and the like. Generally, the thickness will be from about 5 to about 15 mils.

It should be noted that it is not necessary that each article to be encased have an elongate member such as neck **5**. For example, if the outer articles encased do have an elongate member which is disposed through the aperture in the film, there can be placed between these outer articles other articles which either do not have elongate portions or which do not have their elongate portion extending through an aperture of the film but rather abutting and slightly bowing the film. Thus, to prevent lateral movement of articles it is preferable that at least the outer articles adjacent both ends of the substantially cylindrical casing formed from the film (FIGURE 2) have an elongate portion extending through film **2**. It should be noted that this desirability does not necessarily extend to inner articles.

In FIGURE 2 there is shown film **2** placed or wrapped about bottles **1** and overlapping in the area **6**. The overlapped ends of the film are sealed together by conventional means such as heat sealing. The bottles thus encased form an intermediate package which can be used per se without recourse to a subsequent shrink treatment. However, it is presently preferred that film **2** be treated so as to shrink same into intimate and binding contact with all exposed sides of bottles **1** including at least part of the sides **7** of bottles **1** which are adjacent the open ends of the substantially cylindrical casing or covering formed by film **2** after the end sealing operation.

The shrinking of the film can be carried out in any conventional manner well known to those skilled in the art, e.g. chemical or heat shrinking. A suitable heat shrinking procedure is fully and completely set forth in U.S. Patent 2,545,243.

FIGURE 3 shows the package after film **2** has been shrunk thereabout thereby firmly binding bottles **1** together and at least partially covering sides **7** of those bottles.

Generally, any shrinkable material can be employed in this invention. Preferred materials are thermoplastic films which are characterized by being heat shrinkable and are well known in the art. Suitable film compositions in-

clude the polymers of mono-1-olefins having from 2 to 10 carbon atoms (e.g. both low and high density polyethylene, polypropylene and the like), polyvinyl chloride, polyvinylidene chloride, polyethylene terephthalate and the like. Other materials that can be used for film **2** include those which need to be treated with a shrinking and/or swelling agent such as cellulose acetate and similar single or mixed cellulose organic ester materials. These materials, their swelling and/or shrinking agents, and the process for shrinking film are well known. Still other known materials can be employed such as rubber hydrochloride and the like.

It should be noted that bottles **1** need not be full when encased in film **2** but rather in many instances it may be desired to package bottles **1** while still empty and then to fill these bottles in their packaged state. For example, packages of empty bottles can be delivered to a dairy where they are filled with milk on multi-head fillers before being transferred by the dairy to third parties.

It should also be noted that conventional handle means well known in the art can be affixed to the packages of this invention.

Reasonable variations and modifications are possible within the scope of this disclosure without departing from the spirit and scope thereof.

I claim:

1. The method for packaging at least two contiguous articles, at least two of which have an elongate portion thereon, comprising placing around the tops, bottoms, and non-contiguous sides of said articles a single section of shrinkable material having apertures therein adapted to pass over said elongate portions, said section thereby forming an open ended substantially cylindrical covering, said section extending a substantial distance beyond the outer non-contiguous sides of said article that are adjacent the openings at either end of said cylindrical covering, sealing the ends of said section which meet one another and shrinking said section about said articles so that said outer article sides adjacent the openings at either end of said cylindrical covering are at least partially covered by said section in an intimate and binding relation.

2. The method according to claim **1** wherein said articles are containers.

3. A method for packaging at least two contiguous containers, at least two of which have an elongate neck portion integral therewith, comprising folding about the tops, bottoms, and non-contiguous sides of said containers a single section of shrinkable material having individual apertures therein adapted to pass over and about each of said neck portions, said section being of a length sufficient to pass around said containers and meet along an edge thereof to form an open ended substantially cylindrical covering and of a width sufficient to extend beyond the outer non-contiguous sides of said containers that are adjacent the openings at either end of said cylindrical covering from at least 10 to about 50 percent, sealing the ends of said sections which meet, and shrinking said section about said containers so that said outer article sides adjacent the openings at either end of said cylindrical covering are at least partially covered by said section in an intimate and binding relation.

4. The method according to claim **3** wherein said section is composed of a film of heat shrinkable plastic material.

5. The method according to claim **4** wherein said plastic material is composed of polyethylene having a thickness of from about 5 to about 8 mils.

6. A method for packaging a plurality of adjacent bottles, each having a neck portion defining an inlet and outlet aperture, comprising folding around said plurality of adjacent bottles a film of heat shrinkable plastic having a thickness of from about 5 to about 15 mils and having apertures therein adapted to pass over the tops of said bottles and along said neck portions, the length of said film being sufficient to meet along one side of said plurality of bottles and overlap sufficiently to allow sealing of one to the other and said width being sufficient so that the edges of said film extend beyond the outer side of the outer bottles of said plurality of adjacent bottles from about 2 to about 4 inches, heat sealing the ends of said film which meet along the sides of said bottles thereby forming a substantially cylindrical casing which is open at either end and at either end extends from about 2 to about 4 inches beyond the outer side of the outer bottles at that end, and heat shrinking said plastic about the exposed sides of said bottles in a manner such that all exposed sides of said bottles are at least partially covered by said plastic in an intimate and binding relation.

7. The method according to claim **6** wherein said plastic is formed from, at least one material selected from the group consisting of polyolefins, polyvinyl chloride, polyvinylidene chloride and polyethylene terephthalate.

8. A package composed of at least two containers in contiguous relation, at least two of which have an elongate neck portion, and a single, individually apertured film of shrinkable material folded about the tops, bottoms, and non-contiguous sides of said containers in a shrunken state so that said film intimately contacts said containers and forces same together and so that said neck portions extend through said individual apertures, and said shrunken film forms a partially closed but open ended, intimate covering about said containers, said open ends of said covering of film at least partially covering in intimate and binding contact the non-contiguous sides of said containers which are adjacent said open ends.

9. A package composed of a plurality of adjacent and contiguous bottles having neck portions thereon, and a single, individually apertured film of heat shrinkable plastic folded about the tops, bottoms, and non-contiguous sides of said plurality of bottles in a manner such that said neck portions extend through said individual apertures, and said film forms a tight fitting, partially closed but open ended covering that is in intimate contact about said plurality of bottles and that forces said bottles together in their contiguous relation, said open ends of said covering at least partially encompassing in an intimate and binding contact the non-contiguous sides of said bottles which are adjacent said open ends.

10. The package according to claim **9** wherein said bottles are gallon bottles and said film is oriented and has a thickness of from about 5 to about 15 mils.

11. The package according to claim **9** wherein said film is composed of at least one material selected from the group consisting of polyolefins, polyvinyl chloride, polyvinylidene chloride and polyethylene terephthalate.

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U.S. Cl. X.R.

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