

Nov. 6, 1962

D. P. REYNOLDS
PACKAGE

3,062,373

Filed Oct. 28, 1958

3 Sheets-Sheet 1

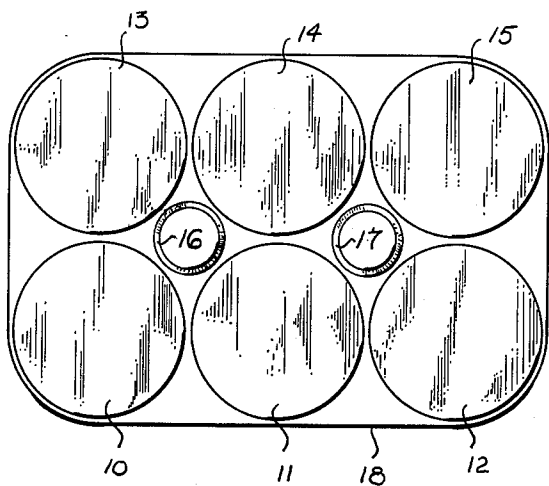


FIG. 1

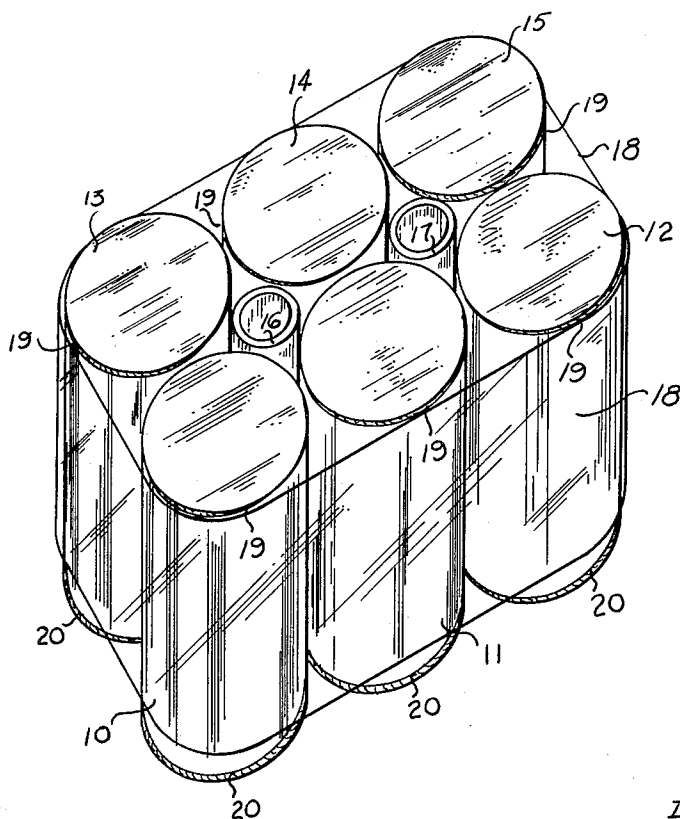


FIG. 2

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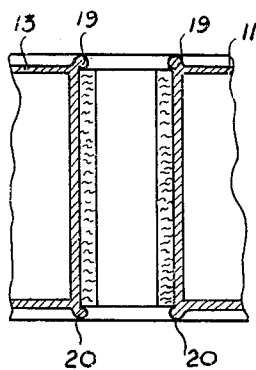
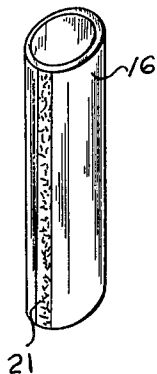
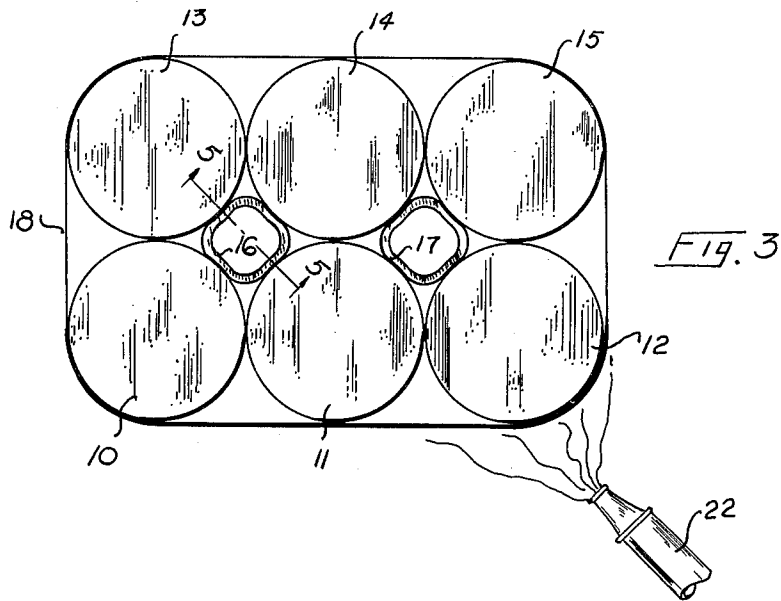
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3 Sheets-Sheet 2



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Filed Oct. 28, 1958

3 Sheets-Sheet 3

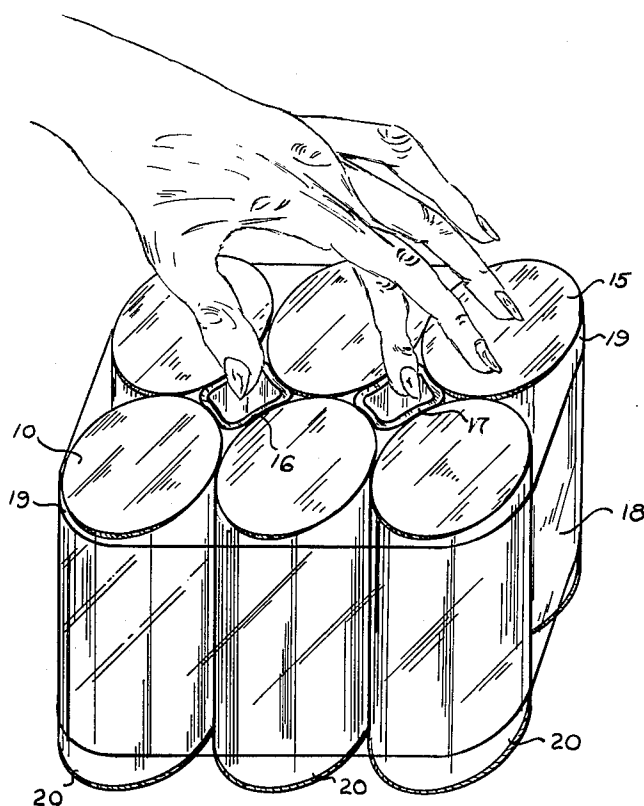


FIG. 6

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3,062,373
PACKAGE

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Filed Oct. 28, 1958, Ser. No. 775,090

9 Claims. (Cl. 206-65)

This invention relates to an improved package and to a process for forming the same. More especially, it relates to the bundling of three or more articles, each having an external configuration which normally entails a minimum of frictional contact between the separate articles. The invention is particularly useful in the forming of a handleable package containing a plurality of uniformly shaped cylindrical articles, although, in its broader aspects, articles having other geometric shapes may be employed.

Many arrangements for providing a handleable package of such articles have been proposed heretofore, but, as far as I am aware, all such packages have possessed certain disadvantages which it is among the objects of my invention to overcome. For example, a filled cylindrical jar or can comprises appreciable mass and unless the can is confined rigidly in the package, rotational or axial slippage of the same, with respect to its companion cans, will occur during handling. Moreover, after the conventional package of cans is once formed, subsequent heat treatment of the contents of the cans, such as pasteurization, tempering, or the like, normally is impracticable.

One object of the invention is to provide an improved handleable package of three or more articles reinforced against mutual shifting of their position.

Another object is to provide an improved package which may be subjected to heat treatment during and after being formed.

Another object is to provide an improved process of forming a handleable package containing three or more similarly shaped cylindrical articles.

A further object is to provide an improved process for simultaneously forming a package of separate containers while subjecting the contents of the containers to heat treatment.

Other objects and advantages will become apparent as the description proceeds when considered in conjunction with the accompanying drawings showing a presently preferred form of package.

In the drawings,

FIG. 1 is a plan view of the package elements showing the relationship of the same prior to completion of the packaging process;

FIG. 2 is a perspective view of the package elements shown in FIG. 1;

FIG. 3 is a schematic view showing the package elements during the process of completing the package;

FIG. 4 is a perspective view of a deformable spacer element;

FIG. 5 is a partial sectional view taken on line 5-5 of FIG. 3; and

FIG. 6 is a perspective view of the finished package.

In general, my invention comprises the arranging of a plurality of separate cylindrically shaped articles in a slightly separated tangential relation to each other with the ends of the articles lying in spaced planes, and with

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each such article having peripherally disposed beads adjacent the respective ends thereof; the interposition of deformable spacers between three or more contiguous articles with the ends of such spacers in contact with the beads of the articles; the enwrapping of the outermost side of the thus arranged articles with a heat shrinkable band of material, and the heating of the band of material to draw the articles into tangential contact while deforming the spacers into a scalloped form for frictional engagement with contiguous articles intermediate the beads on those articles.

As an example, I have disclosed the invention as practiced in the forming of a generally rectangular package of six cylindrically shaped cans containing beer, but it will be understood that, by appropriate choice of spacer size and number, a triangular package of three cans, a pentagonal package of five cans, or other geometric shapes using a different number of cans, may be employed equally well.

Referring first to FIG. 1, six cans indicated at 10, 11, 12, 13, 14 and 15 and two spacers 16 and 17 may be grouped by a suitable jig arrangement, not shown. An endless band of heat shrinkable material 18 may then be slipped endwise over the thus grouped cans to provide the preliminary package arrangement or bundle, as seen in FIGS. 1 and 2. Preferably, the width of said band is at least one half the length of the cans and, when employed with cans containing high specific gravity contents, may be equal to or greater than the distance between the beads of the cans.

Each can, which, for example, may be of aluminum, is provided with a peripheral upper bead 19 and a peripheral lower bead 20 as formed by conventional can manufacturing techniques.

Interposed between the beads of each can, and with its ends in contact therewith, as best seen in FIG. 5 is at least one deformable spacer member. In general, I prefer to employ a hollow tubular spacer member formed from suitably treated paper board or the like, although a solid rod of spacer material may be used. Use of a hollow spacer is particularly advantageous in providing for carrying of the finished package, as will later appear. The spacer preferably is adapted to resiliently deform as in FIGS. 3 and 6, to withstand substantial temperatures, and to withstand moisture. The spacer may contain an outer coating of material which softens during heat shrinking, or otherwise adheres to the surface of the cans. This material may completely cover the outer surface of the spacer and protect the spacer from heat and moisture or may be formed in longitudinal strips 21 as noted on spacer 16 in FIG. 4. Any conventional adhesive material or impregnating material for the deformable spacer may be used as, for example, a wax, paraffin or the like which will give a bond to metal or glass sufficient for the packaging usage, and will protect a paperboard spacer, it being understood that the precise adhesive coating forms no essential part of my invention.

By the same token, the endless band 18 may be formed from any suitable heat-shrinkable material, provided it adequately possesses the characteristics of high shrinkage force, flexibility, resistance to stretching, and strength. In addition, in carrying out the invention with heat processing of the contents of the cans, the band 18 should

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possess the additional characteristics of ability to withstand the temperatures used in such processing. Materials such as the film disclosed in McCoy Patent 2,168,651 and the polyethylene terephthalate film disclosed in Michel Patent 2,762,720 may be utilized for band 18.

With the elements of the package positioned as thus described and as shown in FIG. 1, band 18 is heated by any suitable means and promptly begins to shrink, thus causing its periphery to diminish. At the same time, the band exerts a compression force on the confined articles and the confined spacer or spacers, resulting in the formation of a rigid package. As this occurs, the several cans are pulled into tangential contact with each other and spacers 16 and 17 are deformed into a concave scalloped configuration in contact with the adjacent cans. The adhesive material on the spacers accordingly embraces a substantial surface area of the sides of the cans, thus increasing the frictional resistance against relative rotation of one can with respect to another along the can axis. At the same time, the ends of the spacers, as seen in FIG. 5, firmly anchor against beads 10 and 20 on the cans and thus assist in preventing axial slippage of one can with respect to another. One advantage of having spacers 16 and 17 of an initial size sufficient to space the cylindrical articles slightly apart and requiring deformation (as seen in FIG. 1), is the resulting self-seating action which occurs as the band 18 begins to shrink. As the beads 19 and 20 of the respective cans are pulled into tangential contact with each other and as the spacer deforms and its adhesive surface contacts the adjacent cans, a final package of improved rigidity results, due to the self-seating action of those cans and which is not obtained when a smaller non-deformable spacer is employed.

Any suitable means for heating the band 18 may be employed. The entire assembly may be immersed in a hot medium, such as steam or hot water, as when pasteurization or other heat treatment of the contents of the can is desired; the band may be uniformly heated by relative motion with respect thereto of a nozzle 22 directing a heating medium upon the band without substantial application of heat to the cans; or heat may be applied directly to the cans which, in turn, heat the band 18 by conduction or radiation.

When heated sufficiently, the band 18 contracts as above described and a rigid handleable package is formed. Merely as an example, when employing six contiguous beer cans each having a diameter of about 2½ inches, two spacers having an initial diameter of about 1½ inches are used and after deformation the spacers still retain a minimum diameter of about 1¼ inches. As seen in FIG. 6, the open ends of the deformed spacers therefore provide a convenient opening for grasping the finished package with the thumb and fingers of one hand. It is also a feature of my invention, that an inexpensive, conventional carrying frame (not shown) may be readily attached to the finished package. Such a frame, which is well known, comprises a handle portion and depending legs which extend lengthwise through spacers 16 and 17, being fastened at the base of those spacers.

The band 18, when formed of the material disclosed in said Michel patent is transparent. Accordingly, advertising or maker's identification symbols appearing on the surfaces of the cans remain visible in the finished package.

As many widely different embodiments of my invention may be made without departing from the spirit and scope of the same, it is understood that the invention is not limited except as defined in the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A heat-treated rigid package comprising three or more cylindrically shaped separate articles, each article being in peripheral contact with at least two adjacent articles, a deformed, tubular spacer of scalloped trans-

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verse configuration in frictional engagement with the innermost adjacent peripheral portions of three or more of said articles and a band of heat shrunk material in contact with the outermost peripheral portions of each of said articles exerting a compression force upon said articles and said spacer and causing said spacer to assume and retain said scalloped configuration thereby to nest said articles in contact with each other.

2. A heat-treated rigid package comprising three or more cylindrically shaped separate articles, each article having a peripheral bead adjacent each end thereof and each article being in peripheral contact with at least two adjacent articles at said beads thereof, a deformed tubular spacer of scalloped transverse configuration having its ends in contact with the beads of and its sides in contact with the sides of three or more of said articles, and a band of heat shrunk material in contact with the outermost peripheral portions of each of said articles between the beads thereof exerting a compression force upon said articles and said spacer, and causing said spacer to assume and retain said scalloped configuration thereby to nest said articles in contact with each other.

3. A rigid package comprising three or more cylindrically shaped separate articles, each article being in peripheral contact with at least two adjacent articles, a deformed spacer of scalloped transverse configuration in frictional engagement with the innermost peripheral portions of three or more of said articles, and a band of heat shrunk material in contact with the outermost peripheral portions of each of said articles exerting a compression force upon said articles and said spacer and causing said spacer to assume and retain said scalloped configuration thereby to nest said articles in contact with each other.

4. A relatively rigid package comprising: three or more substantially identical separate articles having cylindrical sides and with ends lying substantially in two parallel planes; a band of heat shrunk material encompassing and lying between said planes and in intimate contact with the outermost peripheral portions of said sides of said articles and exerting a compression force upon said articles to maintain said articles in compressed intimate proximity to each other; and hollow means between the sides of three or more of said articles accessible and of a size to receive a finger of the human hand between the sides of said articles for moving said package.

5. A relatively rigid package comprising: three or more substantially identical separate articles having cylindrical sides and with ends lying substantially in two parallel planes; a band of heat shrunk material encompassing and lying between said planes and in intimate contact with the outermost peripheral portions of said sides of said articles and exerting a compression force upon said articles to maintain said articles in compressed intimate proximity to each other; and hollow means between the sides of two groups each of three or more of said articles accessible and of a size to receive two fingers of a human hand between the sides of said articles for moving said package.

6. In combination, at least three separate cylindrical articles each having outwardly extending top and bottom peripheral rims, each article having its peripheral rims in intimate peripheral contact with the peripheral rims of two adjacent articles, a deformable spacer disposed between said articles and being in contact with said articles, said spacer being disposed between said articles and having opposed ends engaging the inboard surfaces of said top and bottom rims of said articles to prevent axial movement therebetween, and heat shrinkable means surrounding said articles and causing said articles to deform said spacer whereby said heat shrinkage means and said deformed spacer exert forces against said articles to hold said articles in fixed positions relative to each other.

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7. A combination as set forth in claim 6 wherein said spacer is secured to said articles. 2,646,911
 2,677,460
 8. A combination as set forth in claim 6 wherein said spacer is adapted to receive a finger for lifting said articles as an integral unit. 2,758,711
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 9. A combination as set forth in claim 6 wherein said spacer is tubular. 5 2,830,699
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