

Sept. 26, 1967

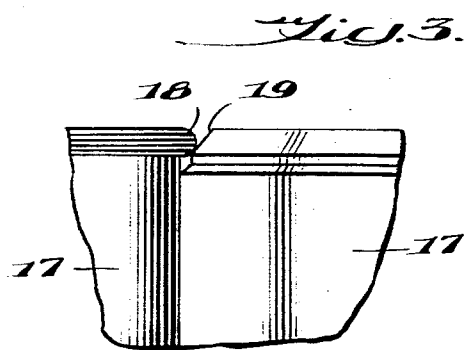
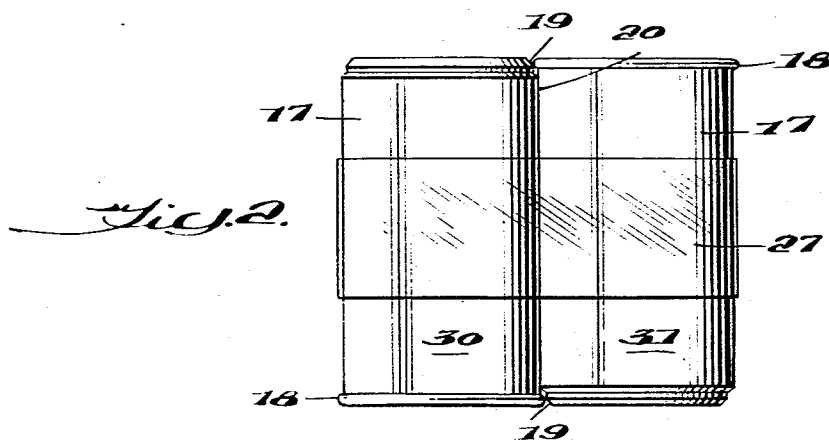
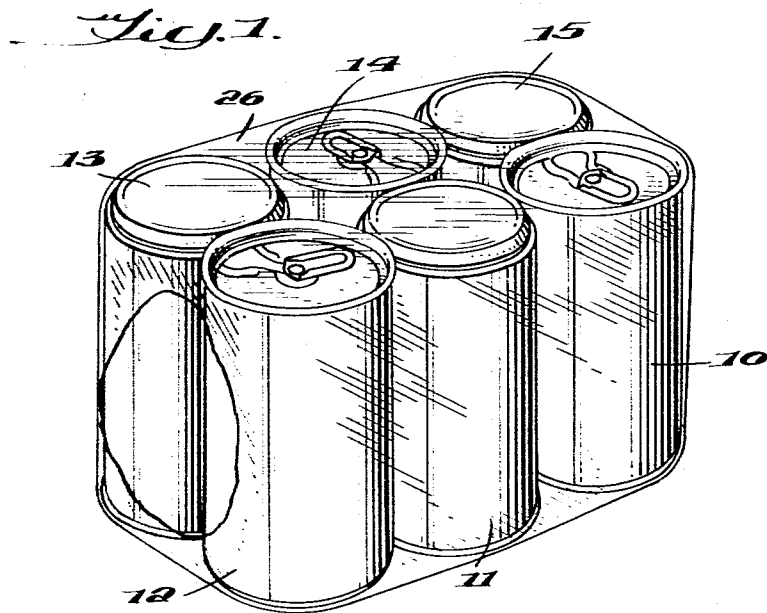
P. G. STEPHAN

3,343,670

MANUFACTURED ARTICLE

Filed July 9, 1965

2 Sheets-Sheet 1



INVENTOR
PAUL GLENN STEPHAN,

BY

Thomas E. Currier
AGENT

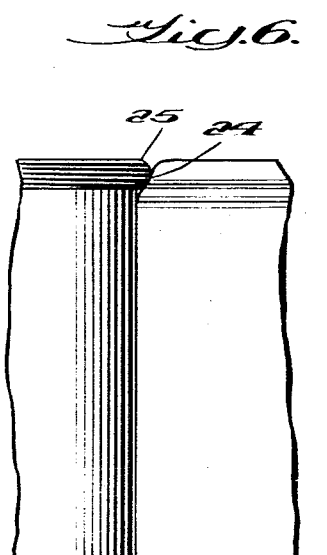
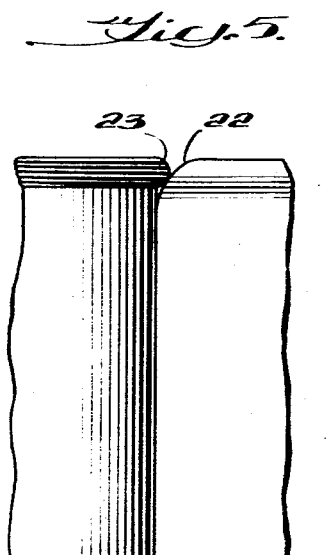
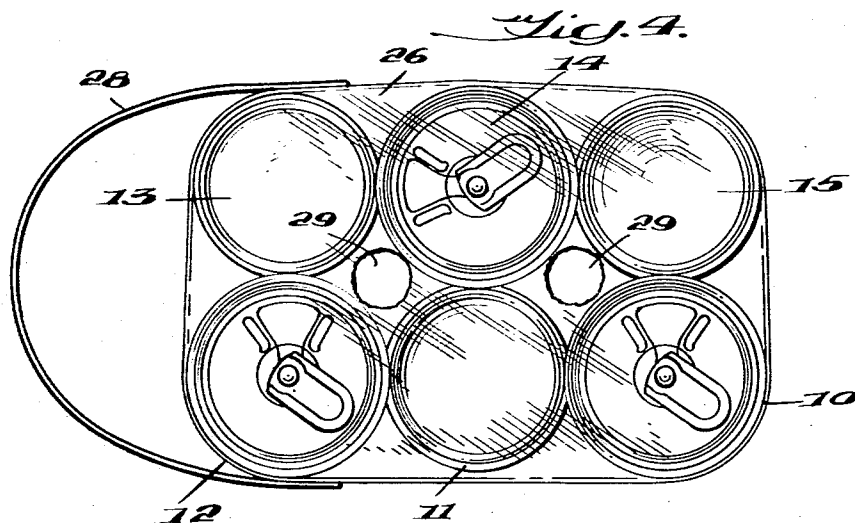
Sept. 26, 1967

P. G. STEPHAN
MANUFACTURED ARTICLE

3,343,670

Filed July 9, 1965

2 Sheets-Sheet 2



INVENTOR
PAUL GLENN STEPHAN,

BY *Thomas E. Curran*

AGENT

1

2

3,343,670

MANUFACTURED ARTICLE

Paul Glenn Stephan, Landenberg, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

Filed July 9, 1965, Ser. No. 470,676

8 Claims. (Cl. 206—65)

This invention relates to a package of cans and more particularly to a package of cans wherein the cans are securely held in place.

For many years the packaging industry has sought improved methods of packaging cans. The voluminous quantity of art relating to packaging the traditional "six-pack" of beer is an indication of the search for new and improved packaging methods. Cans in general and particularly beer cans have been manufactured with a cylindrical wall onto which the tops and bottoms are separately affixed. Such a method results in a circular rim, termed a chime, around the top and bottom of the can of greater outside diameter than the cylindrical wall itself. In packaging cans such as these, spacers are generally used between adjacent cans to hold the cans firmly in place and to prevent can misalignment which may result in the chime of one can indenting the cylindrical wall of another.

More recently there has been developed a method for manufacturing cans, particularly aluminum cans, whereby it is necessary that only one end of the can be chimed. While there may be economic advantages in the manufacture of such a can basic packaging difficulties up to now have remained. The traditional necessity for spacers to maintain can alignment is even more apparent since aluminum is a soft metal and the can wall is easily indented by chime contact. Furthermore, the absence of a bottom row of chimes increases the alignment problems since conventional packaging machines take advantage of a row of bottom chimes to align the cans and assemble a firm package. With these problems in mind the advantage of a package wherein the cans are firmly secured in place and chime/wall contact is effectively avoided without the necessity for spacers can readily be appreciated.

Thus, according to the present invention there is provided a package comprising a plurality of cans, each can having a cylindrical surface terminating at one end with a rim type chime, the other end of said surface being rimless and terminating with a recessed portion. In the package the cans are arranged such that adjacent cans are inverted relative to each other and the recessed portion of the surface of one can receives the rim type chime of its adjacent cans, the cans thus being in substantial contact along the length of their cylindrical surfaces. The cans are secured into a package form by means of a sleeve of sheet material tightly surrounding the plurality of cans.

The present invention and the advantages thereof will become apparent from the following description and the drawings in which:

FIGURE 1 is a perspective view of a plurality of cans.

FIGURE 2 is a side elevation view of two cans.

FIGURE 3 is an enlarged detail view showing the chime/recessed portion arrangement of FIGURE 1.

FIGURE 4 is a top plan view of the plurality of cans of FIGURE 1.

FIGURE 5 is an enlarged detail view of the chime/recessed portion arrangement of another embodiment of a recessed portion.

FIGURE 6 is an enlarged detail view of the chime/recessed portion arrangement of still another embodiment of a recessed portion.

As shown by FIGURE 1 the package of this inven-

tion contains a plurality of cylindrical cans such as 10-15 inclusive. The cans may be made of any rigid material though those made of aluminum are preferably used because of their ease of manufacture in the desired shape. The cans themselves are secured into a package form by a sleeve of sheet material 26.

The shape of the cans in the package of this invention and the arrangement of adjacent cans is as shown in FIGURE 2. The cans 30 and 31, have cylindrical surfaces 17 which terminate at one end with a chime 18. The other end of the cylindrical surface terminates with recessed portion 19 and is chimeless. The cans are arranged such that adjacent cans, for example 10 and 11, are inverted relative to each other and the recessed portion of the surface of one can receives the chime of its adjacent can. This arrangement permits substantial contact between adjacent cans along the length of their cylindrical surfaces. This substantial contact is shown by the solid line 20.

FIGURE 3 shows an enlarged detail view of the chime/recessed portion arrangement of the cans of FIGURES 1 and 2. These cans are shown to have a chime 18 at one end and a recessed portion 19 at the other end. The particular shape of the recessed portion 19 in FIGURE 3 is described as having a bevelled surface that intersects the surface forming the bottom end of the can at greater than a 90° angle. When the chime of an adjacent can is received in the recessed portion 19, the chime rests on the bevelled surface thus allowing substantial contact along the length of the adjacent cylindrical surfaces. While can manufacturing inaccuracies and difficulties may prevent exact resting of the chime on the bevelled surface a close approximation to it is very desirable.

FIGURES 5 and 6 show enlarged detail view of cans with other embodiments of recessed portions. In FIGURE 5 the recessed portion 22 is rounded (i.e., a uniformly contoured recess) and, as shown, the chime 23 of an adjacent can is received in the recess such that there is substantial contact along the length of the adjacent cylindrical surfaces. Similarly, FIGURE 6 shows a recessed portion 24 that is described as being in substantial inverted conformity with the adjacent chime 25 such that the chime effectively nests in the recessed portion. As with the other embodiments, manufacturing difficulties may prevent perfect nesting though such an arrangement is desirable.

FIGURE 4 shows the package can arrangement of this invention when viewed from either end of the cans. The arrangement of the cans in this invention permits packaging of cans without the need for spacers. The can chimes are received in the recessed portion of adjacent cans and thus can slippage and resultant chime/wall contact is effectively avoided. Additionally, as shown by the included figures, the package of this invention is substantially rectangular in outline; an advantageous feature when it is desired to stack many of such packages in rows and tiers.

The sleeve of sheet material 26 in FIGURE 1 and 27 in FIGURE 2 serves to secure the plurality of cans into a package form. The nature of this sheet material is not critical, however, a heat shrinkable thermoplastic film is desired since most commercial films of this type are easily applied and have the advantage of transparency. Additionally, packages wrapped with a thermoplastic film possesses a greater wrapper-to-wrapper coefficient of friction than other wrappers (e.g., paperboard) and thus rows and tiers of packages wrapped with a thermoplastic film have enhanced stability. Examples of useful heat shrinkable thermoplastic films are those manufactured by commercial methods from polymers such as polyethylene, polypropylene, polyvinyl chloride, poly-

3

ethylene terephthalate, and polystyrene. In particular "Clysar" 100 EH 10 which is a trademark for a biaxially oriented, heat shrinkable polyethylene film manufactured by E. I. du Pont de Nemours and Company has been used effectively.

For the purposes of this invention the sleeve of sheet material can surround the plurality of cans in any fashion so long as the cans are secured into a package form. FIGURES 1 and 2 show methods by which the sleeve of sheet material can secure the plurality of cans. In FIGURE 1 the sleeve of sheet material 26 encapsulates the plurality of cans (i.e., tightly secures the cans on the six sides formed by the rectangular outline of the package and substantially covers at least four of the six sides) and has the advantage of protecting the cans, particularly the ends, from dust, moisture and other extraneous matter. FIGURE 2 shows a further embodiment of the manner in which a sleeve of sheet material can secure a plurality of cans into a package form. In this figure the sleeve of sheet material 27 is shown to surround four sides of a plurality of four cans.

A convenient method of fabricating the package of FIGURE 1 simply comprises arranging the plurality of cans in the particular manner set forth previously and then enclosing the cans in a sleeve of the heat shrinkable thermoplastic film such that two ends of the sleeves are open and the sleeve extends a portion on both of the open ends beyond the confines of the plurality of cans. The sleeve enclosing the cans is then subjected to heat for a time and a temperature sufficient to shrink the thermoplastic film in all directions such that the sheet material encapsulates the plurality of cans. Exposure for 0.5 second to a temperature of 330° F. is generally sufficient to form the package represented by FIGURE 1 using "Clysar" 100 EH 10 is the heat shrinkable film. Thus, it is also apparent that packages of the present invention can be rapidly manufactured.

As the line 28 of FIGURE 4 demonstrates, a carrying handle 28 can be readily affixed to the package of this invention. Such a handle can be made out of a heat-set oriented thermoplastic film such as heat-set polyethylene terephthalate and affixed to the package in any convenient position with a pressure sensitive adhesive such as Minnesota Mining and Manufacturing Company's #365 tape. However, any handle or affixing means that does not detract from the basic properties of the package can be used.

Finger holes 29 as shown in FIGURE 4 may also be provided as another type of carrying means for the pack-

4

age of this invention. Such holes are melted through the film wrap as shown. This method of forming the holes is preferred since the melting operation yields a reinforcing bead of the thermoplastic material around each hole.

What is claimed:

1. A package comprising a plurality of cans, each can thereof having a cylindrical surface terminating at one end with a chime, the other end of said surface being chimeless and terminating with a recessed portion, said cans being so arranged that adjacent cans are inverted relative to each other such that the recessed portion of the surface of one can receives the chime of its adjacent cans, said cans thus being in substantial contact along the length of their cylindrical surface, with said cans being secured into a package form by means of a sleeve of sheet material tightly surrounding said plurality of cans.

2. The package of claim 1 wherein said sheet material is a heat shrinkable thermoplastic film.

3. The package of claim 2 wherein said sleeve of heat shrinkable thermoplastic film encapsulates said plurality of cans.

4. The package of claim 3 wherein said plurality of cans is six in number and arranged in two parallel rows of three cans each and wherein said cans are made of aluminum.

5. The package of claim 4 further containing a carrying means.

6. The package of claim 1 wherein said recessed portion of said cans have a bevelled surface.

7. The package of claim 1 wherein said recessed portion of said cans have a rounded surface.

8. The package of claim 1 wherein said recessed portion of said cans have a surface that is in substantial inverted conformity with the surface of said chime such that said chime effectively nests therein.

References Cited

UNITED STATES PATENTS

2,292,702	8/1942	Lambert	220—97
3,144,130	8/1964	Copping	206—65
3,172,557	3/1965	Koenig	220—54
3,217,874	11/1965	Potter	206—65
3,221,923	12/1965	Bozek	220—97

Theron E. Condon, *Primary Examiner*.

William T. Dixon, Jr., *Examiner*.