

Feb. 27, 1968

J. C. DE SHAZOR, JR
CLIP FOR INTERCONNECTING CANS TO FORM A
MULTIPLE CAN PACKAGE

3,370,700

Filed Sept. 16, 1963

3 Sheets-Sheet 1

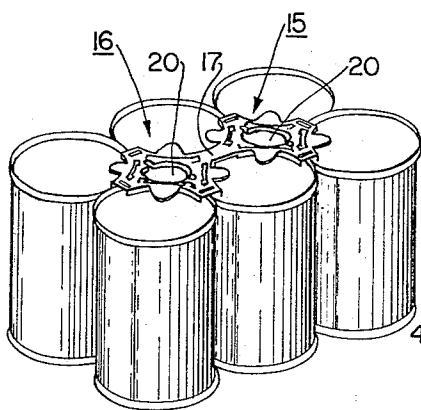


FIG. 1

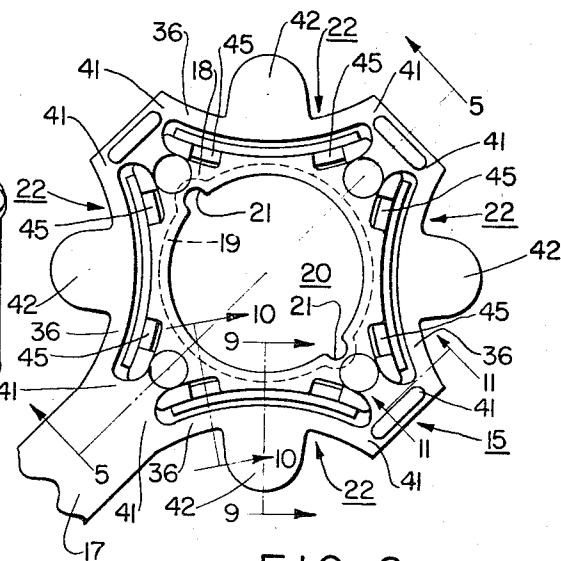


FIG. 2

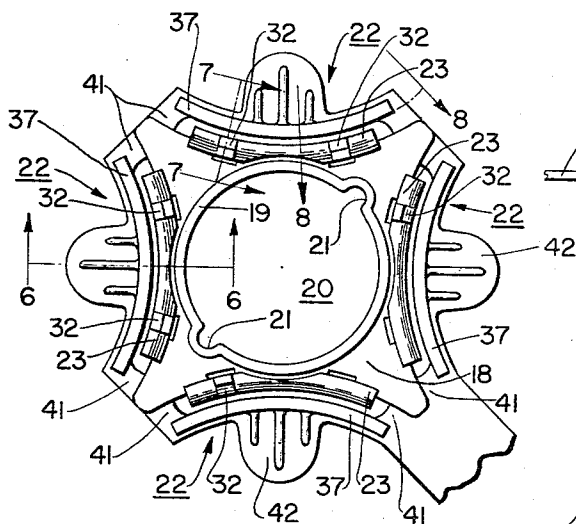


FIG. 3

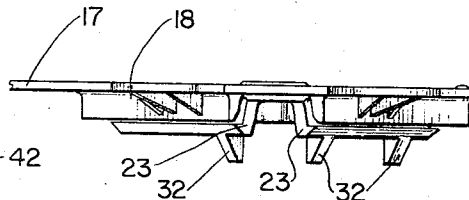


FIG. 4

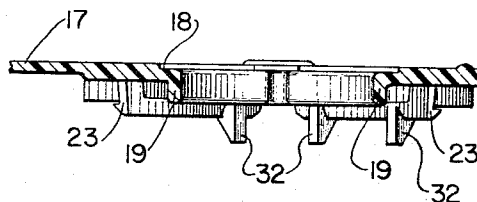


FIG. 5

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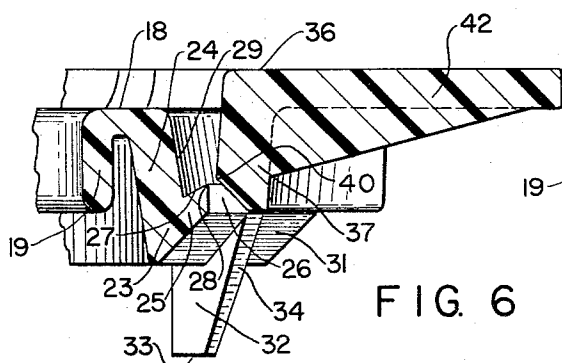


FIG. 6

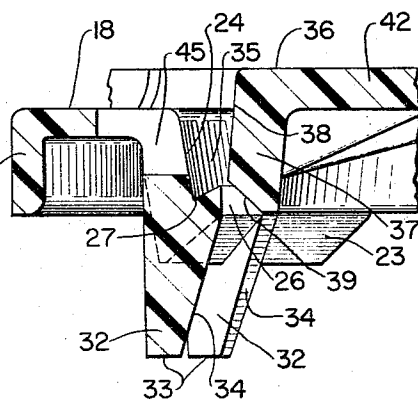


FIG. 7

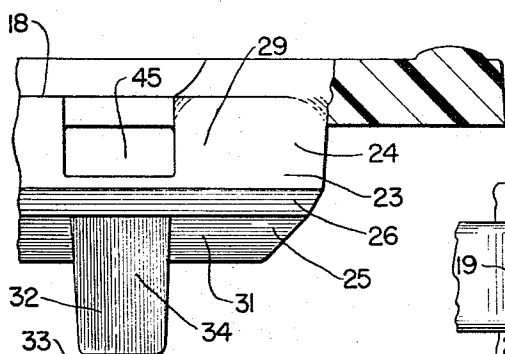


FIG. 8

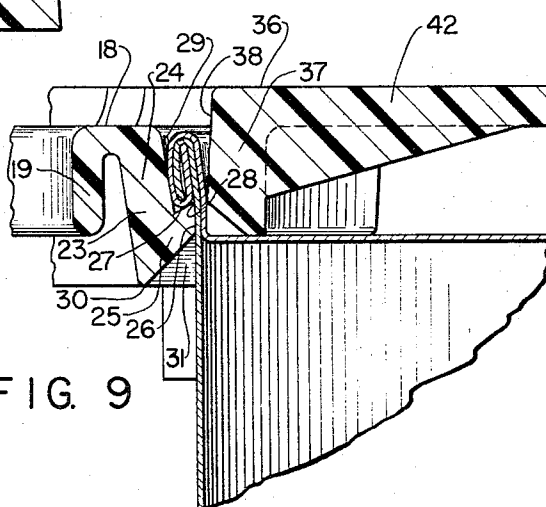


FIG. 9

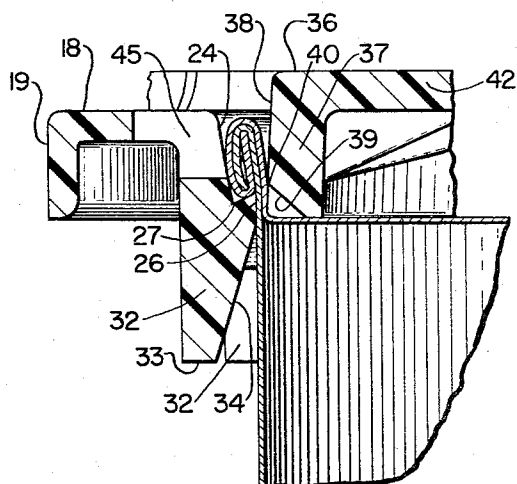


FIG. 10

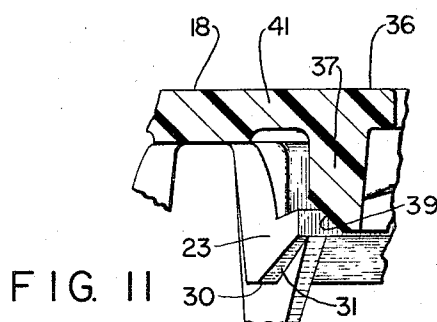


FIG. 11

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3 Sheets-Sheet 3

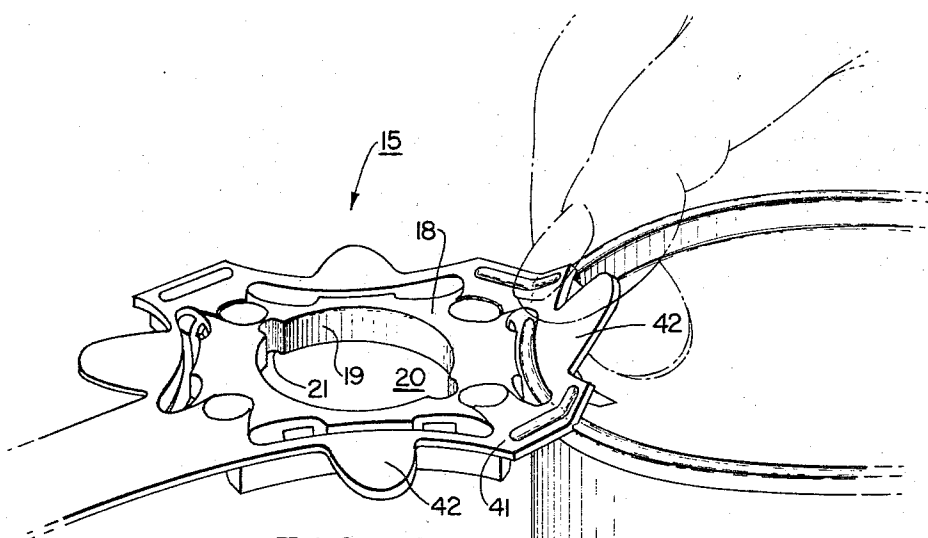


FIG. 12

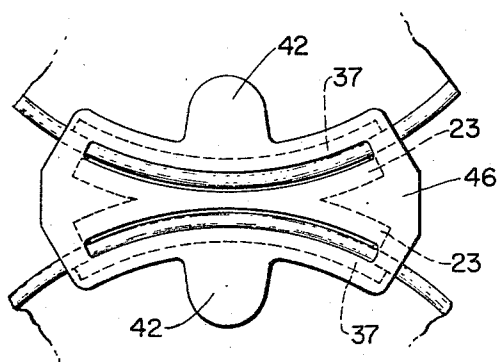


FIG. 13

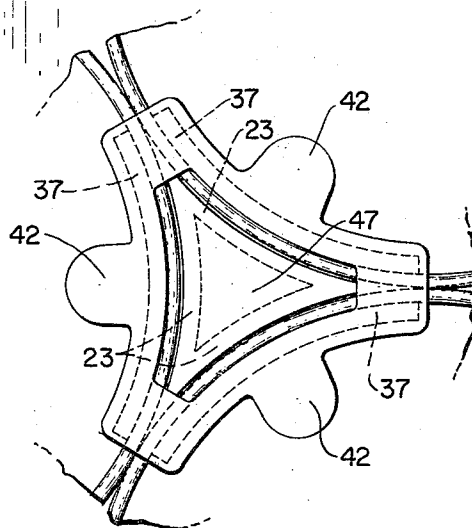


FIG. 14

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CLIP FOR INTERCONNECTING CANS TO FORM A MULTIPLE CAN PACKAGE

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Filed Sept. 16, 1963, Ser. No. 309,258

15 Claims. (Cl. 206—65)

This invention relates to a fastening device, specifically a clip, for releasably securing together a plurality of peripherally beaded cans to form a single package; and the package formed by use of this clip.

The subject matter of this application is an improvement on my prior U.S. patent applications: Ser. No. 100,618, filed Apr. 4, 1961, now abandoned; Ser. No. 174,655, filed Feb. 12, 1962; and Ser. No. 270,341, filed Apr. 3, 1963, now Patent No. 3,255,566. The disclosures of these prior applications are incorporated herein by reference.

It is desirable to market canned products in multiple can packages since consumers frequently purchase in multiples of two or more cans. Further, it is known that multiple can packages increase the over-all sales of the canned product.

This multiple can packaging has been achieved in the past by the use of a paper or plastic overwrap which envelops a plurality of cans to form a multiple unit package.

It has also been suggested that various types of sheet metal and plastic clips can be used for interconnecting cans to form the desired multiple unit package; however, none of the existing clips have been accepted for widespread usage. The metal clips have the serious disadvantage of cutting into the protective coatings on the metal cans and permitting subsequent corrosion, and these clips frequently have sharp edges which subject the user to the hazard of a serious injury during use. The plastic clips devised to date do not offer a secure connection between the cans of the package along with an economical clip which will compete with the plastic and paper overwrap.

This invention provides a molded plastic clip of unique configuration which avoids the disadvantages of the prior clips and can compete in the market place with the plastic and paper overwrap.

It is also desirable to have a connecting clip for cans which permits the easy and simple removal of individual cans from the clip. This invention provides a clip which is simply and easily removed from the individual cans by a slight lifting force on a portion of the clip.

It has also been found desirable, from the convenience standpoint, to have a clip which is reusable so that the purchaser can reassemble the empty cans onto the clip and the plurality of empty cans can be disposed of as a single unit in a simple and efficient manner. The clip of the present invention is reusable such that the empty cans can be reattached to the clip for disposal of the empty cans.

In the drawings I have shown the present preferred embodiment of my invention in which:

FIGURE 1 is a perspective view of the clip, made according to the present invention, attached to six cans to form a multiple unit package;

FIGURE 2 is a top plan view of one half of the clip;
FIGURE 3 is a bottom plan view of one half of the clip;

FIGURE 4 is a side elevation view of one half of the clip;

FIGURE 5 is a cross section taken on line 5—5 of FIGURE 2;

FIGURE 6 is a cross section taken on line 6—6 of FIGURE 3;

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FIGURE 7 is a cross section taken on line 7—7 of FIGURE 3;

FIGURE 8 is a cross section taken on line 8—8 of FIGURE 3;

FIGURE 9 is a view similar to FIGURE 6 but showing the clip attached to the rim, bead or chime of a can;

FIGURE 10 is a view similar to FIGURE 7 but showing the clip attached to the rim, bead or chime of a can;

FIGURE 11 is a cross section taken on line 11—11 of FIGURE 3;

FIGURE 12 is a perspective view showing the manner in which the clip is detached from a can;

FIGURE 13 is a top plan view of a modified form of clip for attaching together two cans; and

FIGURE 14 is a top plan view of a second modified form of clip for attaching together three cans.

The present invention is directed to a plastic clip for forming a multiple can package from upright cans having a bead (rim or chime) projecting outwardly and upwardly from at least one end of each can. The clip includes a body of plastic having a plurality of downwardly extending hook-shaped teeth with at least one of the teeth engaged with the underside of the bead on each can. The clip has a plurality of peripherally disposed extensions from the body with one extension positioned outside each of the teeth. A downwardly directed shoulder is integral with the underside of each extension and is engaged with the inside of the bead on each can opposite the engagement area of the tooth. Each of the extensions is preferably connected to the body of the plastic clip by connectors which are fixed at each end of the extension and extend to the body of plastic. Each extension is spaced from the body of plastic along its length to provide a continuous opening immediately above each tooth of the clip. The connectors provide pivot axes for bending the extension and its integral shoulder away from the engaged bead to release the can from the clip. Subsequently, the extension and shoulder may be pivoted downwardly to connect an empty can to the clip for disposal of the empty cans.

Preferably each tooth on the clip has a long inclined lower surface for directing the can bead to a position between the tooth and the shoulder on the extension. This aspect of my invention is particularly important for insuring accurate efficient high-speed clipping of the cans together as described in my prior U.S. patent application Ser. No. 279,341, filed Apr. 3, 1963.

Each tooth is arcuate to conform with the shape of the can bead when used with conventional cylindrical cans, and preferably each tooth has an arcuate length between 30° and 55° of the arcuate length of the bead (i.e. normally 360°). The preferred embodiment has a tooth having an arcuate length of about 45°. The arcuate length of the shoulder on the clip extension preferably is at least equal to the arcuate length of the tooth and ideally is at least 5° to 10° longer at each end than the tooth. To insure maximum clip holding power, the shoulder extends to a point on the bead at about the location where the bead abuts a bead on an adjacent can.

Clips made according to this invention are particularly unique in providing a structure which will quickly release the clipped can from the package with minimum effort by the user.

The clip is also uniquely constructed to minimize the stressing of the plastic in the clips during attachment to the cans. Stressing of the plastic results in a weakening of the holding power of the clip.

The preferred form of the clip is shown in FIGURE 1 interlocking six symmetrically arranged, tangentially abutting conventional tin cans. It should be noted that one-

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half the clip shown in FIGURE 1 can be used for forming four symmetrically arranged, tangentially abutting tin cans into a multiple unit package and the modifications shown in FIGURES 13 and 14 form two and three can packages, by using the basic clip construction shown in FIGURES 1-12.

Referring specifically to the drawings, the clip is a multiple segment unit having a first clip segment 15 and a second clip segment 16. The clip segments are integrally joined by a collar 17 which connects the facing ends to the segments. The first and second clip segments are identical in structure and only one will be described herein. Considering the clip segment shown in FIGURES 2 through 12, the segment consists of a base, body or central planar portion 18, the upper surface of which is the reference plane for subsequent structural description herein. Centrally of the segment, the planar portion 18 is provided with an integral, downwardly extending wall 19 which is generally circular in form as well as being annularly continuous to provide a finger hole 20 for grasping and holding the multiple can package. Specifically, the integral clip unit of FIGURE 1 is provided with two apertures 20, one in each of the clip segments, so that the users' hand can span the distance between the apertures 20 and the fingers can be inserted in apertures 20 for gripping the multiple can package.

The wall 19 extends downwardly from the planar portion 18 of the clip to provide rigidity in the central portion of the clip segment and to provide a comfortable gripping surface for the fingers of the purchaser's hand. Semi-arcuate depressions 21 may be provided at opposed points in the wall 19 and are useful as guide cavities for automatic packaging of the cans as described in my previously cited patent applications.

Each segment further comprises quadrantly arranged radial portions 22. Each radial portion is identical in construction and includes a continuous downwardly directed tooth 23 integral with the underside of the clip in planar portion 18. Each tooth 23 is arcuately shaped as previously described and includes a wall portion 24 and an outwardly extending tooth portion 25. The outer end 26 of the tooth portion 25 is blunted in an arcuate vertical plane to engage the side of the can along the arcuate length of the tooth. The top surface 27 is inclined downwardly and inwardly toward the clip body at an angle between 5° and 45° from the horizontal, with a preferred angle between 20°-35° and ideally between 25°-30°. The juncture of end 26 and surface 27 is pointed at 28 to engage the rim or bead of the can at its juncture line with the side wall of the can. The outside face 29 of wall 24 is preferably sloped upward and inward toward the clip body at an angle between 5°-15° and preferably between 8°-10° from the vertical. The lower face of tooth 23 is blunted at 30 and merges with a continuous outer sloped face 31 which is sloped upwardly and outwardly at an angle between 15°-60° and preferably about 45° from the vertical.

Each tooth 23, located on the outer ends of the clip, has a pair of spaced tooth extensions 32. Each tooth on the inside of the clip, adjacent connector 17, has a single tooth extension 32. It is desirable not to provide similar tooth extensions on the teeth immediately adjacent the connector 17 since the users' fingers will experience discomfort upon engaging any projections in this area when the package is grasped as previously described; however, it is within the scope of this invention to provide identical teeth and extensions at all portions of the clip.

Each tooth extension 32 is an integral part of a tooth 23 and extends a substantial distance below the lower face 30 of the tooth. The lower end of the extension 32 is preferably blunted at 33 and has an upwardly and outwardly sloping front face 34, which is preferably sloped between 45° and 75° from the horizontal, with an ideal slope between 55 and 60° from the horizontal. The face 34 of the tooth extension minimizes the criticality of the

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placement of the can beads or rims beneath the clip preparatory to attaching the clip to the cans as described in my prior cited patent applications. The surface 34 is engaged by the can bead as the clip moves toward the can, and the surface 34 directs the can bead toward the right in FIGURE 7 into engagement with portions of the clip to be described hereinafter.

The area immediately above the tooth 23 is open so that no portion of the plastic clip is hooked over the top of the can bead or rim in the area immediately above the tooth. This structure permits greater flexibility of the tooth 23 to permit flexure of the structure about its juncture point between the wall 24 and the planar portion 18 of the clip. In attaching the clip to the rim or bead of the can, it is necessary for this tooth-like structure to flex toward the left in FIGURE 7 to admit the can bead or rim into a clipping area or cavity 35 formed between the tooth and an adjacent wall to be described hereinafter.

Each clip extension includes an outer portion 36, which forms a substantially planar extension of the planar portion 18 of the body of the clip, and includes an integral, downwardly directed, outer peripheral wall 37. The wall 37 is uniformly spaced along its length from the tooth 23 to form the clipping cavity 35 therebetween. The inside face of the wall 37, generally designated 38, is sloped downwardly and inwardly at an angle between about 3°-10° from the vertical and away from the tooth 23 with a preferred angle of slope of about 5°. The lower end of the face 38 joins a bottom face 39 sloping downwardly and outwardly at an angle between about 15° and 60°, with a preferred angle between about 40° and 50°, and an ideal angle at about 45° from the vertical. The line of juncture between the face 38 and face 39, generally designated 40, is slightly above and almost opposite the point 28 formed by the juncture of the faces 26 and 27 of the tooth 23. The distance between the point 28 and point 40 is less than the radial width of the rim or bead of the can, thus necessitating a spreading of these two points to permit the rim or bead to enter the clipping cavity 35 formed by the surfaces 27, 29 and 38. The surface 39 is slanted to permit the can bead or rim, which engages this surface during the attachment of the clip to the can, to direct the bead or rim toward the opening between points 28 and 40 and into the clipping cavity 35. Thus the surfaces 34 and 39 cooperate to properly direct the bead into the cavity 35.

The wall 37 is arcuately shaped to conform with the inside surface of the bead or rim of the can and extends along an arcuate length as described hereinbefore. It is desirable that the wall 37 have a length at least equal to the arcuate length of the tooth structure 23 and ideally is at least 5° to 10° longer at each end than the tooth.

The outer portion 36 is connected to the body of the clip by connectors 41 bridging the space between the outer portion 36 and the body 18. These connectors are located outside the ends of each tooth 23 so that a continuous opening is provided above the entire length of the tooth 23. These connectors 41, which are located at the point where the clip segment joins the segment connector 17, are inherently part of the segment connector 17 as shown in FIGURE 2. However, even in this instance the connectors 41 operate in the manner to be described hereinafter.

An outwardly extending tab 42 is integrally joined at about the midpoint of each outer portion 36 and extends outwardly therefrom and includes reinforcing gusset plates 43 molded between the tab 42 and the wall 37 as shown in FIGURE 9. The tabs 42 are located above the top surface of the can when the clips are joined to the bead or rim of the can as shown in FIGURE 9 and permit the user to insert a finger between the tab 42 and the top end wall of the can to pivot the tab, wall 36 and wall 37 upwardly as shown in FIGURE 12, thereby swinging the wall 37 out of engagement with the inside surface of the rim or bead of the can to release the can from the clip. As noted in FIGURE 12, the pivot points for wall

37 are the connectors 42 so that there is little or no resistance to the bending movement of the outer wall 37 in releasing the cam from the clip. It should also be noted that the connectors 42 do not break upon bending them upwardly (see FIGURE 12) and therefore after the can is emptied, its rim or bead may be reinserted into the clipping cavity 35 and the tab 42 grasped by the user to pivot the wall 37 downwardly into position to rejoin the can to the clip for disposal.

As described in the above cited patent applications, it is necessary to stack the clips one on the other for feeding to an automatic clipping machine. Since the tooth extensions 32 extend below the lower edge of the tooth 23, it is difficult to properly stack the clips vertically in a stable stack. To accomplish a vertical stacking of the clips, I have provided small openings 45 in the top wall surface 19 of the clip in a position immediately above the tooth extensions 32 such that when the clips are stacked one on the other, the tooth extensions 32 fit into the openings 45 thereby permitting a compact vertical stacking of the clips.

FIGURE 13 shows a modified form of my clip for connecting together two tangentially abutting can rims or beads. This clip is substantially identical in construction with the clip hereinbefore described so far as the manner in which it is attached to the bead or rim and the rim engaging portions are joined by a continuous wall 46 which bridges the area between the cans immediately adjacent the point at which the cans abut.

FIGURE 14 shows a second modified form of my clip for connecting the rims or beads of three tangentially abutting cans. The structure and function of this clip in snapping on the rim or beads of the cans is identical to that hereinbefore described and the clip has a flat upper surface 47 which bridges the area between the abutting cans.

While I have described my present preferred embodiments of the invention, it may be otherwise embodied within the scope of the following claims.

I claim:

1. A multi-can package comprising: a pair of parallel rows of upright cans having beads projecting outwardly and upwardly from at least one end of each can; means for securing said cans together including a body of plastic having a plurality of downwardly extending hook-shaped teeth, one of said teeth being engaged with the underside of said bead on each can, a plurality of extensions on said body, one extension being positioned outside each of said teeth, an integral shoulder on the underside of each extension, each of said shoulders being engaged with the inside of said bead on each can, each of said extensions being connected to said body of plastic only by connectors affixed between each end of the extension and said body of plastic, and each extension being spaced from the body of plastic along its entire length to provide a continuous opening above said teeth, each of said teeth including a downwardly directed tooth extension providing a long inclined lower surface for directing said can bead to a position between said teeth and said shoulder during assembly of said package.

2. A package according to claim 1 wherein said connectors provide pivot axes in bending said extension away from the adjacent bead to release the can from said body for securing the can together.

3. A package according to claim 1 wherein each of said teeth are arcuate to conform to the shape of said can bead, and each of said teeth have an arcuate length of about 45°.

4. A plastic clip adapted to be snapped on outwardly and upwardly extending beads on the ends of a plurality of containers arranged in side-by-side relationship, comprising: a one piece plastic body having a plurality of peripheral portions individually conforming to the shape of said beads, each peripheral portion having a substantially vertical face terminating at its lower end in an out-

wardly extending ledge engageable beneath a can bead; an inwardly and downwardly sloping surface on the underside of said ledge; shoulder portions spaced from and positioned opposite each of said vertical faces; said shoulder portions conforming to the shape of and engageable with the inside of said beads, an inwardly and upwardly sloping surface on the inside lower end of said shoulder portions, said sloping surfaces directing the can bead to a position between the surfaces upon exerting a vertical force on the clip with the can bead aligned vertically with respect to the bead so that the ledge can snap under the bead and said shoulder portion can snap into engagement with the inside of said bead, and at least one downwardly projecting extension on the underside of said ledge, said extension providing an inclined lower surface for directing said bead to a position between said ledge and said shoulder.

5. A clip according to claim 4 wherein said shoulder portions are affixed to said plastic body only by connectors extending between the ends of the shoulder portions and said body.

6. A clip according to claim 4 wherein said vertical face, ledge and shoulder portions are arcuate to conform to the shape of said bead, and said shoulder portions are affixed to the plastic body by connectors integral with the arcuate ends of each shoulder portion and extending across the can bead, when attached to the clip, to the plastic body, so that the shoulder portions may be readily swung upward from the bead with the connectors functioning as a hinge immediately above the bead to release the bead from the clip.

7. A resilient, flexible plastic carrier clip for simultaneously gripping and holding in spaced relationship the top portions of four cylindrical and substantially similar containers, each having a peripheral bead on the upper edge thereof, said clip comprising four interconnected outer clip portions to individually engage a container bead, each portion having an inner leg and outer leg, said legs being arcuate, concentric and spaced from each other; the inner leg being hook-shaped to engage beneath the underside of said bead, said outer leg being engageable inside said bead; the bead being gripped and held between the inner and outer legs, at least one downwardly projecting extension on said inner leg for directing said peripheral bead between said inner leg and said outer leg, and connectors integral with the ends of the legs and spanning the space between the legs, said outer leg being readily pivoted away from said bead with said connectors acting as a hinge.

8. A clip according to claim 7 wherein said legs and connectors form a U-shaped cross sectional portion at each end of the legs.

9. A one-piece plastic clip for securely connecting at least three generally cylindrical cans or the like having annular end rims disposed in substantially abutting parallel relationship so that a space is inclosed between the cans, comprising polygonal body means having a generally flat portion positioned above the space between the cans and including at least three corner portions for projecting at least partially between immediately adjacent pairs of the cans, each of said corner portions comprising a pair of generally oppositely disposed sections for extending downwardly along inner surfaces of adjacent rims, a pair of generally oppositely projecting hook-shaped members for engaging beneath rims of immediately adjacent cans, said can rims being releasably held within the corner portions between said sections and said hook-shaped members, and said sections being pivotally mounted relative to said hook-shaped members by a portion of said body means forming a bridge therebetween, each of said hook shaped members having at least one downwardly projecting extension for directing said rim while said cans are being connected.

10. A clip according to claim 9 wherein said sections

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and said hook-shaped members extend along the can rims for at least about 45°.

11. A clip according to claim 9 wherein each of said hook-shaped members has a downwardly directed leg and an integral outwardly directed leg; said outwardly directed leg having a top face sloped downwardly toward the juncture of the legs.

12. A clip according to claim 9 wherein each of said sections and said hook-shaped members have a lower edge forming a slope relative to the vertical, said edges sloping toward each other so that a can rim is directed by the edges to a position between adjacent sections and members.

13. A multi-can package comprising: a pair of parallel rows of upright cans having beads projecting outwardly and upwardly from at least one end of each can; means for securing said cans together including a body of plastic having a plurality of downwardly extending hook shaped teeth, one of said teeth being engaged with the underside of said bead on each can, a plurality of extensions on said body, one extension being positioned outside each of said teeth, an integral shoulder on the underside of each extension, each of said shoulders being engaged with the inside of said bead on each can, each of said extensions being connected to said body of plastic only by connectors affixed between each end of the extension and said body of plastic, and each extension being spaced from the body of plastic along its entire length to

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provide a continuous opening above said teeth, each of said teeth being arcuate to conform to the shape of said can beads, and each of said teeth having a pair of spaced downwardly extending tooth extensions, each tooth extension providing a lower face inclined outwardly toward said shoulder to direct the can bead to a position between the tooth and shoulder.

14. A package according to claim 13 wherein said connectors provide pivot axes in bending said extension away from the adjacent bead to release the can from said body for securing the cans together.

15. A package according to claim 13 wherein each of said teeth are arcuate to conform to the shape of said can bead, and each of said teeth have an arcuate length of about 45°.

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