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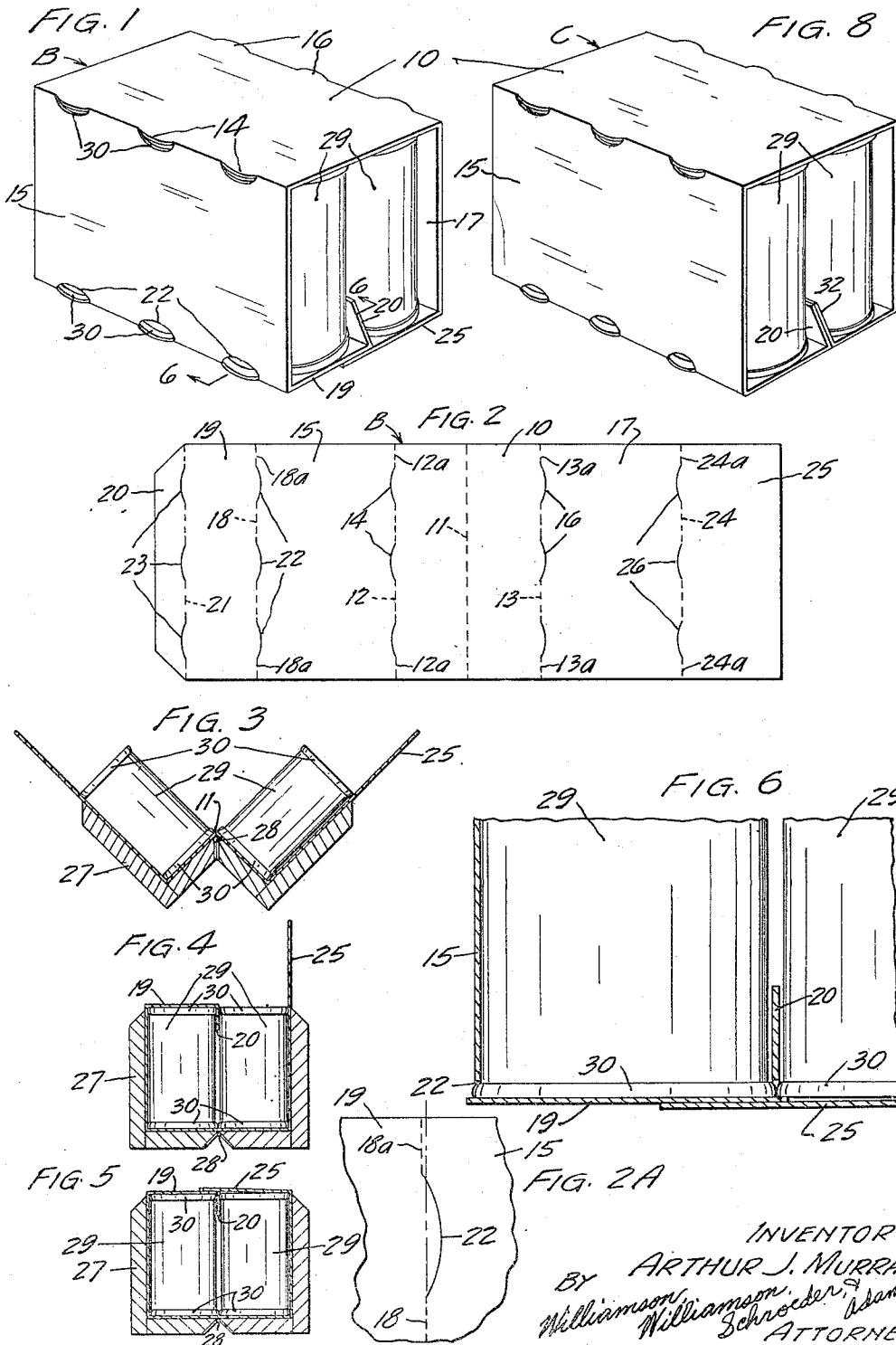
A. J. MURRAY

2,765,073

FOLDABLE CARTON FOR CANNED GOODS

Filed June 16, 1952

3 Sheets-Sheet 1



INVENTOR
BY ARTHUR J. MURRAY
Williamson, Williamson, Schreder, Adams
ATTORNEYS

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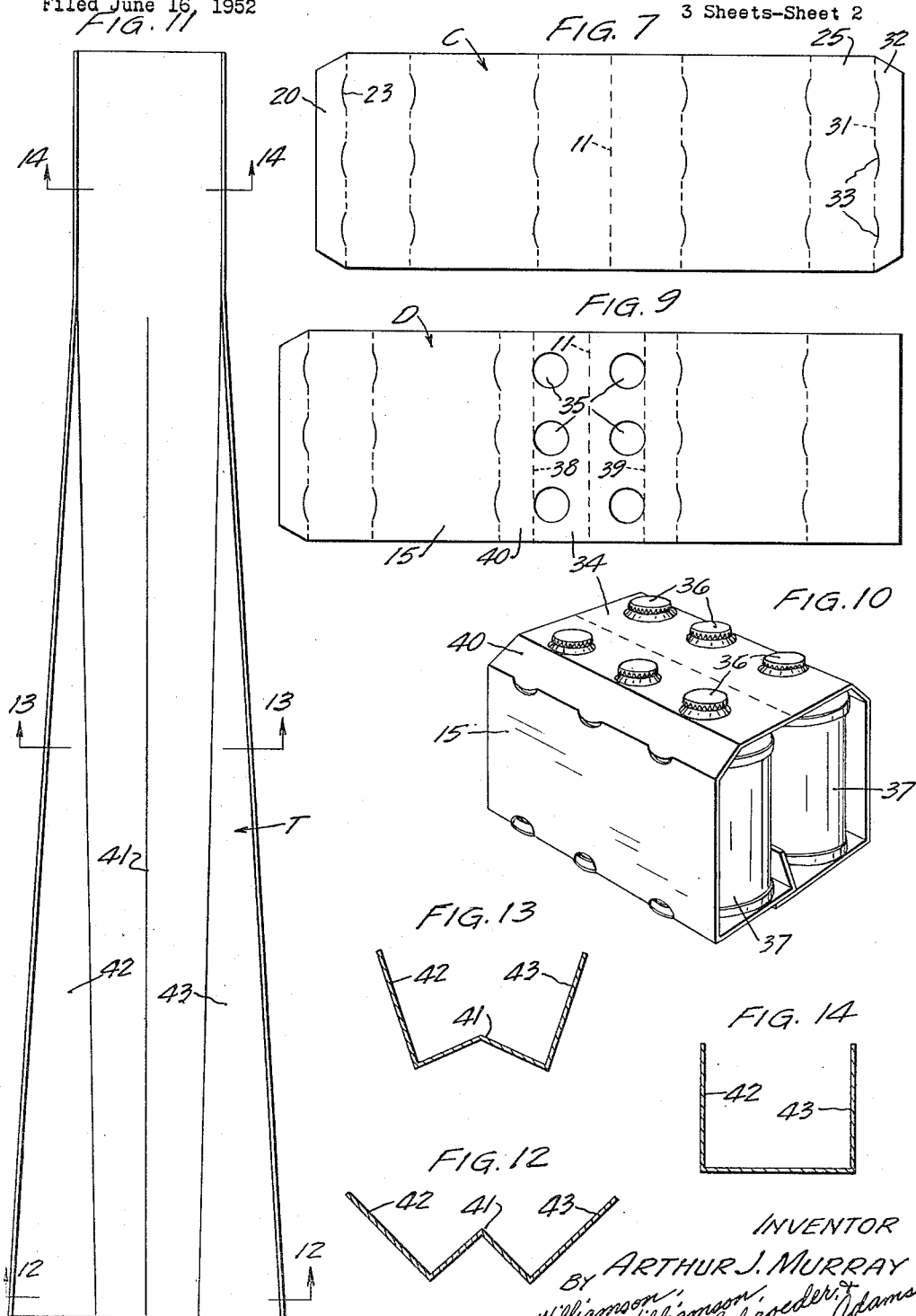
A. J. MURRAY

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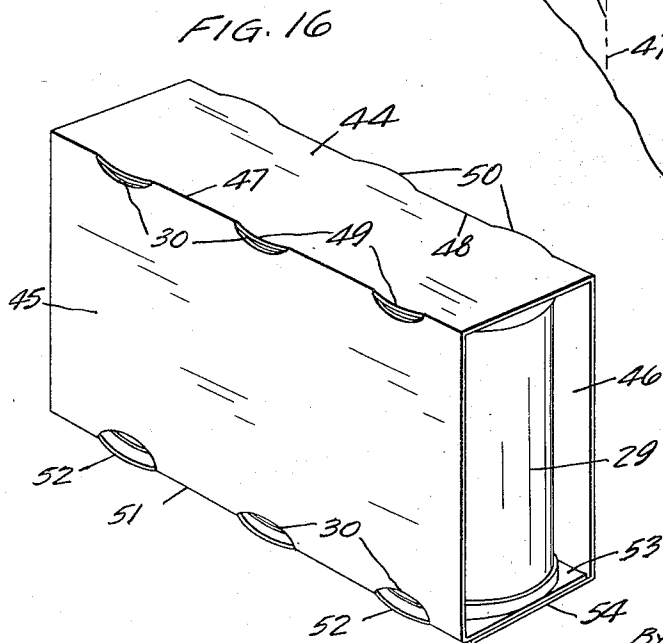
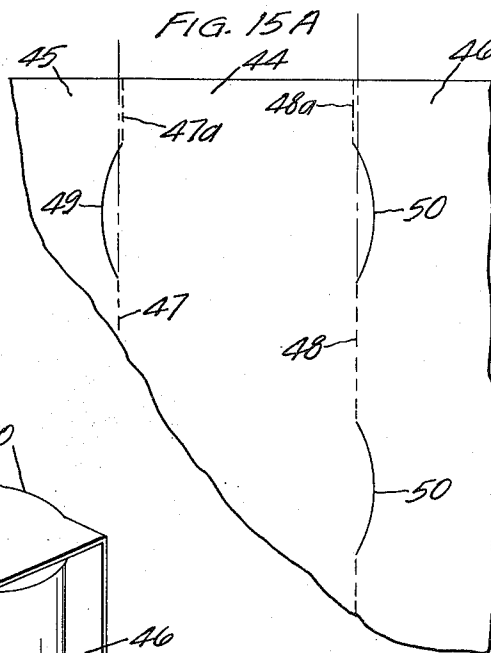
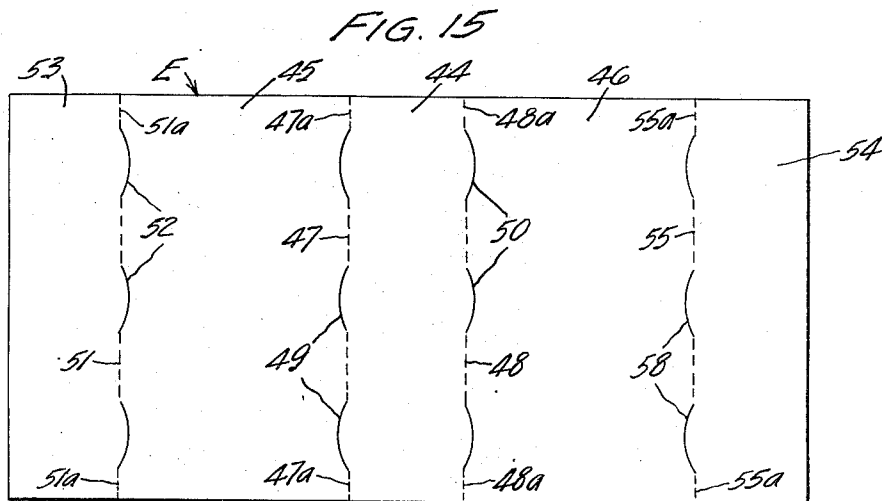
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INVENTOR
ARTHUR J. MURRAY
BY
Williamson
Williamson
Schrader
& Adams
ATTORNEYS

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FOLDABLE CARTON FOR CANNED GOODS

Arthur J. Murray, Minneapolis, Minn.

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1 Claim. (Cl. 206—65)

This invention relates to packaging articles such as canned goods and particularly to a foldable carton and a method for packaging such articles in said carton for factories such as canneries so that the resultant package will have said articles arranged in one or two short contiguous rows and firmly secured therein.

It is a general object of my invention to provide for a highly efficient foldable carton together with a method for packaging quickly and economically canned goods such as beer, in a high speed mass production system employing my novel carton blank disclosed herein.

At the present time there are a number of types of carrier cartons supplied by canneries and breweries to the trade in general for the purpose of packaging canned goods therein at the time they are sold to the public. These cartons and carriers are of such nature as to require a great deal of added expense in the event that such canneries and breweries were to package the articles before selling them to the wholesalers and distributors. It has therefore been the general practice to supply these cartons to retail outlets where the articles are packaged at the time of ultimate sale to the consumer. More recently, however, it has become the desire of canners and brewers to offer the trade a prepackaged quantity of canned articles which will be inexpensive enough to warrant such packaging at the factory and which will increase the sales appeal of the items by virtue of their compact packaging and the efficiency in storing, handling and transporting thereof. To my knowledge there has been no carton blank capable of being formed over the canned articles by a method rapid enough to keep pace with the production of such articles while being mass produced in the factory.

It is therefore another object of this invention to provide for a foldable carton blank and method of packaging canned articles in such carton blank which will be rapid, economical and efficient, though performed in the factory rather than at the ultimate point of sale.

It is another object of this invention to provide for a foldable carton for canned goods such as beer which will retain the articles in a highly efficient, compact unit without danger of separation therefrom while at the same time maintaining a neat plain-sided rectangular form capable of being handled and stacked in multiple units so as to form a stable and neat assembly.

It is a still further object of this invention to provide for a cheap and simple carton which will, in a single fold about the peripheries of two short contiguous rows of such articles, contain and retain said articles against displacement therefrom by interlocking the articles merely at their beaded edges, further complicating and expensive retaining means being rendered entirely unnecessary.

It is a still further object of this invention to provide for a foldable carton blank for producing a packaged article of the class described which may be formed simply by a single die-cut operation without the necessity of a separate punching operation to remove certain sections of the

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die-cut article as has been common practice in the past. In this connection, it is also an object to provide for a method of forming retaining openings within a carton blank which consists simply in bending the blank at fold lines interconnected by discontinuous arcuate cut lines so as to break loose the die-cut lines at spaced intervals and without further attention thereto.

It is still another object of the invention to provide for a method of packaging two short contiguous rows of canned articles such as beer in which the carton blank and articles to be packaged are inserted into means for enveloping the articles as they are simultaneously advanced from an open spread position to a compacted closed position with the extremities of the carton blank in position to be finally secured.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a perspective view showing my completed carton with canned articles such as beer retained therein in two short contiguous rows;

Fig. 2 illustrates a plan view of the foldable carton blank after the die-cutting operation which blank has been used to form the carton shown in Fig. 1;

Fig. 2A is a segment of an end cut line on the blank of Fig. 2 enlarged sufficiently to show the offset in the fold line;

Fig. 3 illustrates diagrammatically the beginning of the packaging operation with the carton blank of Fig. 2 placed in a W-formed jig with the articles in place preparatory to wrapping and packaging;

Fig. 4 shows the intermediate step in the wrapping of the articles shown in Fig. 3 with the upstanding separator or dividing sheet in place between the rows of articles;

Fig. 5 illustrates the completely packaged article with the bottom portion thereof adhesively secured in place preparatory to removal of the finished product;

Fig. 6 is a detailed sectional view of the completed package removed from the jig shown in Fig. 5 and inverted to upright position shown in Fig. 1, the section being taken on the lines 6—6 of Fig. 1;

Fig. 7 shows a modified carton blank after having been die-cut, said modified carton blank having two upstanding divider sheets or separators rather than the single one disclosed in the preferred embodiment;

Fig. 8 is a perspective view illustrating a completed packaged unit employing the carton blank of Fig. 7;

Fig. 9 illustrates a further modification of my carton blank in which holes or openings are formed in the central section thereof for additional retention of articles packaged therein, as well as economy of material in the formation of the blank;

Fig. 10 is a perspective view of the modified package containing beer cans with capped tops secured within the modified blank shown in Fig. 9;

Fig. 11 diagrammatically illustrates the trough-like surface to be contacted by my novel carton blank in practicing my method of wrapping and securing canned articles within said carton blank;

Fig. 12 is a cross sectional view of the diagrammatic representation shown in Fig. 11 taken near the beginning point at arrows 12—12;

Fig. 13 is a cross sectional view of an intermediate point in my continuous surface-contacting trough taken on the lines 13—13 of Fig. 11; and

Fig. 14 is the upper or final portion of my surface contacting trough with the W-formation completely merged into a rectangular form for enclosing the articles in final packaged form;

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Fig. 15 illustrates a plan view of a foldable carton blank adaptable to a single row of canned goods;

Fig. 15A is a segmental view of certain end portions of fold lines of the blank of Fig. 15 enlarged sufficiently to show the offset therein; and

Fig. 16 shows the blank of Fig. 15 when formed into a carton surrounding a single short row of canned articles.

Referring now more particularly to the drawings, my foldable carton blank is shown in preferred form in Fig. 2 and may constitute a single sheet of foldable material such as cardboard which can be preformed as shown into cut or slit lines and fold lines which conditions the sheet for use as a carton to retain articles such as canned beer. It will be noted that the cut or slit lines all join with fold lines and that openings which must be punched out in the original flat sheet are completely avoided. Although it is preferred that the slits or cuts be made completely through the blank sheet, it is to be understood that it is sufficient for the purposes herein disclosed if the slits are cut almost through the blank so that the slit will separate in the manner to be disclosed herebelow when the fold line is placed under bending stress. Obviously the blank should retain strength at the fold lines and any cutting or scoring therealong should be relatively light as opposed to the separable slits. The carton blank is indicated generally at B and comprises a central section 10 for closely overlying the top of said articles and has centrally disposed across said blank B a center fold line 11. At either side of the central section 10 are fold lines 12 at the left of central fold line 11 and fold line 13 to the right thereof. The fold lines 11 and 12 extend across the blank B in an aligned fold line which may be straight but is preferably formed with slightly off-set end portions as shown in Fig. 2A and is discontinuous at spaced intervals thereacross. Between the termini of the discontinuous portions of fold line 12 are curved cut lines 14, the ends of which join the said termini and the curvature of which extends beyond the projection of fold line 12 across the carton blank B and into the adjoining side section 15 forming a part of blank B. In a similar manner curved cut lines 16 join the termini of the discontinuous portions of fold line 13 and are formed through the blank B in an area extending beyond the projection of fold line 13 and into side section 17. Joining side section 15 in a discontinuous fold line 18 is a bottom section 19. A separator or a dividing sheet 20 in turn joins the bottom section 19 in a discontinuous fold line 21. Curved cut lines 22 extend across the termini of the discontinuous portions of fold line 18 and curved cut lines 23 in a similar manner extend across the termini of the discontinuous portions of fold line 21. The cut lines 22 all extend over the projected line 18 and into the area of the side section 15 and the curved cut lines 23 likewise extend over the projected fold line 21 and into the area of separator or divider sheet 20. At the other end of the blank B a fold line 24 connects bottom sheet 25 with the side section 17 and curved cut lines 26 extend across the discontinuous portions of fold line 24 and project into the area of side section 17. The end portions 12a, 13a, 18a, and 24a of each corresponding discontinuous fold line are preferably off-set slightly as typified in detail in Fig. 2A, so as to narrow slightly the end openings of the carton and thereby exert a restraining influence assisting in preventing endwise displacement of the canned goods from the carton.

In wrapping or packaging articles such as beer cans within my improved and simplified carton blank B I may place the blank in a jig or form 27 which is of general W-formation and hinged at the apex 28 as shown in Fig. 3. The central fold line 11 is superimposed upon hinged line 28 and the fold lines 12 and 13 coincide with the lower portions of the W-jig or form with the remainder of the blank extending upwardly and lying closely against the outer side walls of the jig 27. Articles such as canned beer 29 are placed on top of the carton within the jig so that the beaded portions 30 rest against the

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curved cut portions 14, 22, 16 and 26. It will be noted that folding the blank B at fold line 12 causes the curved cut lines 14 to automatically break loose from the side section 15. The breaking of the cut lines 14 from an opening at each cut line within the area of side section 15 and at the same time an overextending tab projecting in the plane of top section 10. A similar situation exists at fold line 13, the folding thereat causing openings to appear in side section 17 and coextensive tabs to be formed in the plane 10. The outwardly extending beaded portions at the periphery of cans 29 will project into these openings so that the remainder of the sides of cans 29 will contact the side plane area of section 15. In a similar manner cans 29 forming the second short row will likewise have their beaded peripheries 30 extend through openings formed at the fold line 13. Folding the bottom section 19 over the ends of cans 29 will likewise form openings at fold line 18 which will allow the beaded peripheries of said cans to extend respectively through these opposite openings and be retained therein. The bottom section 19 is then brought in close contact with the top ends of one row of cans 29 as shown in Fig. 4 with the end separator or divider sheet 20 bent over at fold line 21 to produce still another set of openings at cut lines 23 for engaging the inner portions of the beaded peripheries 30. The W-form or jig 27 is then hinged to closed position as in Fig. 4 with the separator or divider sheet 20 tightly disposed between the beaded peripheries 30 of the two short contiguous rows of canned articles. Similarly the bottom section 25 is folded at fold line 24 again forming openings at the cut lines 26 to engage the outer edges of beaded portions 30 on the second row of canned articles. The bottom section 25 is brought into close contact with the ends of the second row of canned articles 29 and the overlapping end thereof is adhesively secured to the surface of bottom section 19, thus keeping the formation of the packaged carton. The entire assembly may then be removed and inverted as shown in Fig. 1 with the bottom and top beaded peripheries of both rows of articles cooperating with corresponding openings in the side sections of the carton blank to retain them securely within. The inside portions of the beaded peripheries of the two rows of articles will be in contacting relation through the openings 23 formed at fold line 21 when the separator or divider sheet 20 was folded angularly to bottom section 19. These openings at cut line 23 will maintain the lower beaded peripheries of the canned articles in aligned relationship so that the bottoms of the individual cans therein will all lie in a continuous and coincident plane. Obviously, the tops of the cans will be similarly disposed although no particular retaining means need be supplied at the top beaded peripheries. This relative positioning of the rows of articles is important in establishing a uniform squared package, the slight pinching at the ends caused by the off-set fold lines not disrupting the generally right angled plane surfaces and the sides of the carton being sufficiently plane to produce a package which may be stacked one upon the other and one alongside the other in a large quantity, forming a uniform and stable stack. A carton which would not maintain the beaded edges of such cans in opposed relation must necessarily have a slight but positive rhomboidal configuration which would multiply itself in a multiple stack of cartons so as to form an unstable stack. Furthermore, the shifting of cans within a carton so as to allow overlapping of the beaded edges would likewise loosen and weaken the wrapping about the cans. The arrangement of the articles within the stiff and plain-sided carton thus simply forms a multiple function in producing an efficient and long lasting carton. The opposed pressing relation of the beaded edges 30 through the openings formed by cut lines 23 through the divider or separator 20 is shown in detail in Fig. 6. Likewise the positioning and retaining of the outer portions of the beaded periphery through openings in side wall 15 is illustrated in the same figure. It will be noted

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that the sides of cans 29 are in close contacting relation with the side section 15 although it is not necessary to distort by bulging the plane surface of the side section 15 in order to obtain complete satisfactory retention of the articles.

Referring now to Fig. 7 the modified carton blank shown therein is indicated generally by the letter C. This blank is identical in most respects with the carton blank B shown in Fig. 2. The corresponding bottom section 25, however, has an added fold line 31 so as to form at the end of the blank C opposite the upstanding separator section 20 another identically formed separator section 32. Cut lines 33 may be formed in the usual manner across the discontinuous termini of the fold line 31 to form openings in the separator section 32 in a manner previously described. In forming the carton with the blank C the steps are similar except that the separator or divider sheets 20 and 32 are adhesively coated at their outer surfaces and simultaneously projected downwardly between the rows of articles instead of merely inserting the separator section 20 individually as was the case in Fig. 4. The adhesive securing of separator sheets 20 and 32 result in a completed package having the same retentive nature as that of the first embodiment shown in Fig. 1, the latter being illustrated in perspective in Fig. 8. It will be noted that the openings formed in separator 20 by cut lines 23 will register with the openings formed by cut lines 33 in the separator sheet 32, the beaded edges of the two rows of cans engaging one another at their inner peripheries through the double opening in the same manner as previously described with respect to the first embodiment.

In some cases the canned articles such as beer have containers with beaded peripheries situated in the normal manner but containing a tapered top portion terminating in a mouth adapted to be capped by an ordinary crown bottle cap. In order to gain added retention and to save on material of construction the portions of the top area 34 of blank D shown in Fig. 9 have openings 35 disposed therein through which the tops 36 of beer cans 37 may extend as shown in Fig. 10. The modified blank D in Fig. 9 is similar to blank B in Fig. 2 except that an additional fold line 38 is formed to the left of the central fold line 11 and a corresponding fold line 39 is disposed to the right thereof. When the blank is formed about the beer cans 37 a sloping plane 40 is formed between the top surface 34 and the side section 15. All the cut lines will form openings to engage the beaded peripheries of the cans as heretofore described, the carton merely closely cooperating with the shape of the cans 37, with the caps 36 extending through the openings 35 therein.

Rather than forming the carton blanks disclosed herein about canned articles while said blank and articles are placed in a jig such as disclosed in the Figs. 3, 4 and 5, I may employ a continuous method of packaging a plurality of units simultaneously, the more rearward of said continuous articles being in an initial stage of packing, and the more forwardly ones being in a more advanced stage of packaging. I do not feel that the detailed apparatus whereby this method of packaging may be accomplished is necessary to the description of the method. I therefore show only a surface configuration whereby the carton and containers placed therein will be guided successively and continuously from the initial stages of packaging to the final enclosed form. This surface may appear as an elongated trough T, the top elevation of which is shown in Fig. 11. Referring now to Fig. 12 the cross section of the lower portion of trough T is in the form of a W designed to support a two-row carton blank such as disclosed herein in the same manner as the folding jig 27, the central fold line 11 being superimposed upon the middle apex 41 of the W formation and the side sections 15 and 17 lying respectively against the side walls 42 and 43. The carton together with its containers (not shown) may then be

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advanced to an intermediate point, the cross section of which is shown in Fig. 13, at which point the packaging operation is partially completed. Separator or divider sheets may then be inserted between the rows of contiguous containers as the article in process is advanced continuously along the trough T. As the carton and articles contained therein approach the forward end of the trough the divider sheet may be clamped between the rows of articles and the overlapping bottom sheet secured adhesively in place so as to correspond to the formation of the container carton shown in Fig. 5 in the jig form 27. The corresponding cross section of this forward end of the trough T is shown in Fig. 14 taken on lines 14—14 of Fig. 11. It is understood that other cartons are being continuously formed, each of them in a different stage of completion. The finished carton will be in inverted condition and may be righted immediately after it is completely formed with the weight of the cans therein assisting in securing the adhesive bond at the underside of the completed carton.

Although a blank for a carton which accommodates but a single row of canned articles does not lend itself to use in the W-shaped trough during the packaging operation, I nevertheless wish expressly to include as my invention such carton and blank therefor embodying the same principles of retention and of formation at the fold lines. Thus, Fig. 15 shows an alternate form of carton blank designated by the letter E. At the central portion is a top section 44 to which is joined the side section 45 and the side section 46. The discontinuous fold line 47 forms the juncture of the sections 44 and 45 and the discontinuous fold line 48 forms the juncture of the sections 44 and 46. Cut lines 49 are disposed in off-set manner between the termini of the discontinuous portions of fold line 47 and cut lines 50 are disposed between the termini of the discontinuous portions of fold line 48. At the end portions of each of the fold lines 47 and 48 are off-set portions 47a and 48a, details of the relative positions and formation of the off-set portions being shown in enlarged detail in Fig. 15A. It will be noted that the off-set 47a is formed very slightly to the right of the middle portion of fold line 47 and that off-set portion 48a is disposed slightly to the left of the middle portion of fold line 48. In a similar manner a discontinuous fold line 51 has cut lines 52 across the termini of its discontinuous portions, and the end portions 51a are slightly off-set to the left of the middle portion of fold line 51. The bottom flap 53 joins the side section 45 at fold line 51. Oppositely disposed in the blank is another bottom flap 54 which joins the side section 46 in a discontinuous fold line 55. Cut lines 58 join the termini of the discontinuous fold line 55 and the end portions 55a of fold line 55 are off-set slightly to the right of the middle portion of fold line 55 as shown. I prefer to arrange the off-set of the end portions throughout so as to be opposite to the off-set of the cut lines. When the blank E is formed about a short row of canned goods such as beer cans 29, the beads 30 at the top and bottom of the cans 29 will project through the cut out portions formed when the fold lines are bent. The bottom flaps 53 and 54 are then placed in overlapping relation as shown in Fig. 16 and are secured together as by adhesive means to complete the package. As illustrated in Figs. 15 and 16 the flaps 53 and 54 are of substantially equal width and extend across the width of the carton. It is understood that one of the bottom flaps 53 and 54 may be constructed with a lesser width provided sufficient overlapping surface be maintained for secure fastening. The off-set end portions 47a, 48a, 51a and 55a cause the carton to be almost imperceptibly narrowed at each open end. This narrowing effect, even though slight, has a pronounced effect upon the retention of the beer cans 29. The juncture of each of the end portions of the fold lines with its end cut line is cooperatively engaged with the

bead 30 of each of the end cans 29 in the carton and the beads 30 of the cans are already tightly gripped in the cut out openings formed when the carton is folded along the fold lines. Since the end areas of the carton, which are outwardly of the outside cut out portions, are still closer together any tendency of the beer can 29 to become loosened and to become displaced endwise from the carton will be further prohibited. Since the problem of abutting beads 30 between two rows of cans is not present in the single row carton it is not necessary to have an upstanding separator or its equivalent. Since there is little tendency for such single row carton to warp or bend longitudinally the beaded edges 30 of the contiguous cans 29 in the single row will not tend to overlap. Here again as in the case of the double row carton it is not essential and may even be undesirable to create a bulging area at the point of contact of the side walls of cans 29 with the side sections of the carton.

It may thus be seen that I have devised a simple and cheap foldable carton for articles such as beer cans which may be employed by my novel method in mass production at such a low cost as to make feasible the complete packaging of small quantities of canned articles such as beer at the factory itself rather than at the retail outlet. The key to my discovery is the natural expedient of utilizing an off-set cut line in a die-cut sheet which needs no punching operation to form an opening for cooperation with the articles contained in the finished carton, but which will automatically be formed during the folding of the carton without further attention thereto, said opening causing little weakening of the carton structure and utilizing to best advantage the projecting beaded peripheries as the cooperatively retained portion of each individual article. All of the foregoing has been accomplished while at the same time maintaining a rectangular package which will lend itself conveniently and neatly to stacking during storage and transportation.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts without departing from the scope of my invention.

What I claim is:

A carton for snugly packaging and for carrying, in row formation, a plurality of generally cylindrical containers of the type having closed tops and bottoms and out-turned beaded edges at the top and bottom ends thereof, said carton comprising a continuous strip of foldable sheet material and having as integral portions thereof, a top section, a bottom section and side walls interconnecting said top and bottom sections extending perpendicularly thereto and defining at each juncture a transverse fold line across the sheet, each of said fold lines being discontinuous at spaced intervals and having slits respectively spanning said intervals and extending into the associated side sections to form openings in each of said side sections for receiving the chimed ends of cans when the sheet is bent at said transverse fold lines to form the carton, said fold lines at their terminal portions adjacent the opposite longitudinal edges of said strip being off-set slightly inwardly relative to the top and bottom sections from their greater and intermediate portions, whereby when the strip is folded to make the carton as defined, the ends of the carton will be narrowed under tension to exert restraining influences against endwise displacement of cans from the carton, said slits because of the perpendicular folding of said sections and walls along the fold lines forming apertures for receiving and retaining protruding portions of the respective tops and bottoms of the cans while also forming in the continuous portions of the top and bottom sections, projecting lips for engagement with the closed ends of the cans.

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