May 23, 1961 L. E. ARNESON 2,985,294

PAPERBOARD CAN PACKAGE

Filed June 22, 1954

Fig. 1.

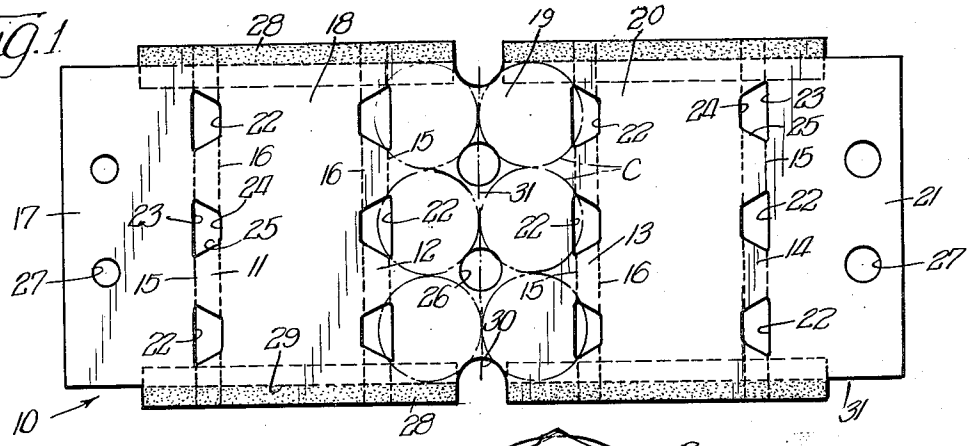


Fig. 2.

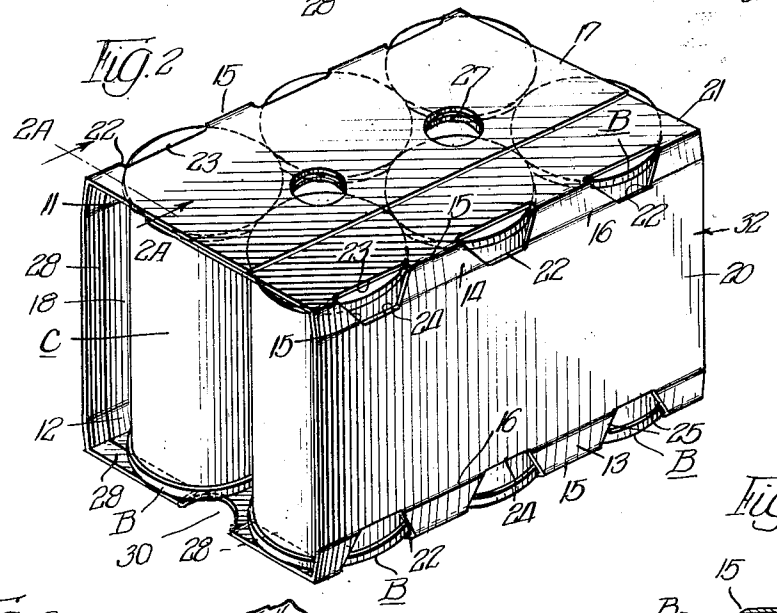


Fig. 2A.

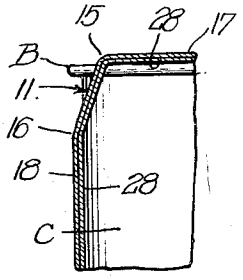
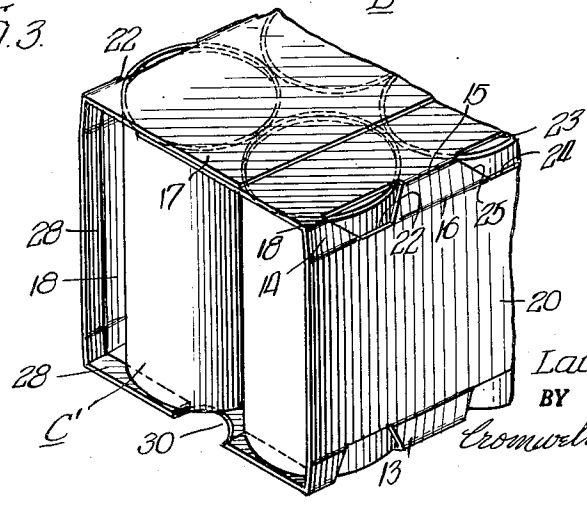


Fig. 3.



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PAPERBOARD CAN PACKAGE

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7 Claims. (Cl. 206—65)

The present invention relates to an improved, open-ended, wrap-around sleeve type packaging unit or band for cans and like cylindrical objects, and to an improved package in which such objects are arranged in a generally rectangular group or cluster. They are held securely in this arrangement by the sleeve of the invention, which is specially reinforced for the purpose and is wrapped very snugly about opposed upper and lower circular side edges of the cans of the cluster, the packaging sleeve or band being provided with specially shaped apertures in its upper and lower side margins which accommodate the cans. The margins referred to are also indented substantially into the spaces between successive cans, so that the latter are firmly and positively gripped and held against endwise displacement from the open-ended packaging band.

More particularly in regard to these matters, the invention affords an improved reinforced paperboard blank featuring special strengthening flanges across its opposed ends, a paperboard packaging sleeve unit fabricated from the blank, in which can accommodating apertures along upper and lower marginal zones bear a special relationship to the strengthening flanges, and a resultant improved can package in which a group of cans are very tightly embraced by the sleeve at upper and lower extremities of the group, the strengthening and reinforcing flanges of the sleeve bearing the abrasive action of cans received in the marginal sleeve apertures at the ends of the package.

Considering the above factors more specifically, the blank is died out of paperboard stock in a generally rectangular outline, being subdivided by transversely extending creases. These creases are arranged in parallel pairs at zones which will coincide with the top and bottom side margins of the completed package. They coincide longitudinally with opposed margins of can-engaging apertures of special shape, i.e., of truncated triangular outline. It is contemplated that when the packaging unit is applied to a group of cans under substantial tension of its material, the longer, base margin of the aperture will lie across the top of can, subtending a substantial arc of the curvature of the latter, while the shorter parallel margin of the aperture will snugly embrace the outer curvature of the can body, in vertically spaced relation to its base margin. The convergent angled sides of the aperture will then take like frictional engagement with its parallel margins, for a very tight and effective grip on the can.

In constituting the top and bottom side or corner fold zones of the packaging unit by pairs of vertically spaced, transversely extending creases, the unit is enabled to be applied with equal effectiveness in the packaging of cans which are equipped with projecting top and bottom beads or chimes or to umbeaded cylindrical articles.

The end reinforcing flange members or flaps referred to above extend a substantial portion of the lengthwise dimension of the blank but terminate short of opposite ends thereof, at which end zones the sleeve unit is adhesively secured in its ultimate, tubular, wrap-around shape. There thus results a uniform double-ply thickness

of the overlapped zone of a top forming panel, permitting application of uniform sealing force along the entire length of the zone in the completion of the package.

The flanges referred to above are folded 180° about a crease hinging the same to the remainder of the blank, and are adhered to the respective top, side wall and bottom forming panels thereof, particularly across the ends of the apertured top and bottom fold zones. So adhered, the flanges strongly reinforce the package at the ends thereof, absorbing the wearing action of the cans, which is made pronounced by the relative tightness with which the sleeve is secured. The additional thickness of stock at these critical points also gives additional rigidity and stability to the package as a whole.

The foregoing statements are indicative in a general way of the nature of the invention. Other and more specific objects will be apparent to those skilled in the art upon a full understanding of the construction and purposes of the improved blank, packaging device and package.

A single embodiment of the invention is presented herein for purpose of illustration. It will be appreciated that the invention may be incorporated in other modified forms coming equally within the scope of the appended claims.

In the drawings:

Fig. 1 is a top plan view of a flexible paperboard blank from which the reinforced packaging sleeve unit is formed, the final position of end reinforcing flange elements thereof being indicated in dotted lines;

Fig. 2 is a perspective view of a package constituted by a packaging band, produced from the blank of Fig. 1, as applied to a group of cylindrical cans of the beaded or chime type;

Fig. 2A is a fragmentary view in transverse vertical section along line 2A—2A of Fig. 2; and

Fig. 3 is a fragmentary perspective view similar to Fig. 2, showing the relationship of the packaging band and package contents in the form of cans of a plain, unbeaded variety.

In producing the improved package, a blank **10**, as shown in Fig. 1, is died out in a generally rectangular outline from a suitable grade of flexible paperboard stock, the blank being of elongated character. It is subdivided transversely by a succession of corner fold zones **11**, **12**, **13**, **14**, each of which is defined by pairs of aligned, transversely extending creases **15**, **16**, into rectangular panels. These are, in the order reading from left to right in Fig. 1, a first top forming panel **17**, a side wall forming panel **18**, a bottom panel **19**, a side wall forming panel **20**, and a second top forming panel **21**.

Can accommodating apertures **22** are died out of the blank in each of the zones **11**, **12**, **13**, and **14**, there being three of these apertures in each corner zone. They are of truncated triangle outline and the direction of orientation of the apertures in the blank alternate in the successive transversely extending zones **11** through **14**. Apertures **22** are defined by relatively wide base margins **23**, opposed parallel margins **24**, and convergent angular margins **25** connecting the respective ends of margins **23**, **24**. Parallel margins **23**, **24** coincide with the lines of the creases **15**, **16**, and the apertures **22** are spaced transversely across the blank in accordance with the spacing of the cans C or similar cylindrical objects to be packaged. Each of panels **17**, **21** is provided with a pair of transversely spaced finger holes **26** at its midpoint, and bottom panel **19** may also be provided with similar transversely spaced apertures **27**, those on top forming panels **17** being so located in relation to the ends of blank **10**, and to the outermost sets of creases **15**, that they will register with one another when the package is completed.

Finally, blank **10** is provided with elongated, laterally projecting reinforcing flaps or flanges **28** along its longitudinally extending opposed end margins, the flanges

being integrally hinged to the respective margins by longitudinally aligned creases **29**.

It will be observed that the flanges **28** on each edge of the blank are separated from one another by an inwardly extending bay **30** of substantial size, located at the midpoint of bottom panel **19**, these bays being in transverse alignment with one another. It will also be noted that the respective flanges **28** terminate substantially short of the opposite extremities of the blank, leaving cut away notches **31** adjacent those ends. Bottom panel **19** may additionally be provided with a transversely extending crease **31** at its longitudinal midpoint, i.e., in transverse alignment with the centers of holes **26**, however, this is optional and the need therefor is occasioned solely by the type of apparatus employed to apply the packaging unit to the cans.

In order to complete the package unit to a flat, knocked-down condition thereof, adhesive is applied to the four reinforcing flaps or flanges **28**, as indicated by stippling in Fig. 1, following which these flaps are folded upwardly, inwardly and downwardly 180° to the dotted line position, thereby adhering the same to the panels **17–21** inclusive, and to the intervening, transversely extending, double-creased fold zones **11–14** inclusive.

The application of the thus completed packaging unit, generally designated **32**, to the cans C simply involves the positioning of a group of six of those cans, in parallel rows of three each, on the bottom forming panel **19** of the blank, so that the bottoms thereof are tangent to the transverse center line of the panel and in edge contact with one another, as indicated in dot-dash line in Fig. 1. This leaves the outer curvature of the cans projecting substantially into the area of the apertures **22** on either side the group or cluster. Side wall panels **18, 20** are then folded upwardly 90° and top forming panels **17, 21** are folded inwardly into overlapped relation to one another, in which position they are tightly drawn toward one another and sealed together by a transversely extending stripe of adhesive in the zone of overlap.

These operations are ideally performed in a continuous fashion by means of wholly automatic machinery, by which the flat carrier unit is advanced in a direction paralleling its fold zones **11** through **14**. A group of cans is deposited on panel **19**, in the arrangement described above, as the unit advances forwardly, and the folding operations referred to are successively performed without halt of the travel of the unit.

It is an important feature of the invention that the unit **32** is tightly and snugly wrapped in encircling relation to the group of cans, the material of fold zones **11, 12, 13** and **14** which intervenes between successive apertures **22** being drawn snugly into the spaces between successive cans, as illustrated in Figs. 2 and 2A. It then straddles the beads B and exposed side curvatures of the cans in a very secure and displacement resisting fashion. The innermost, shorter marginal edges **24** of apertures **22** take snug gripping engagement with the curved body of the can, well beneath the beads thereof, the outermost, longer marginal edges **23** ride across the top surface of the can, and the tapered side margins of the apertures engage the beads and can sides at the ends of these respective edges. A multiple frictional grip on the cans is thus had which is very effective in preventing their displacement.

A similarly effective grip is had on cans of the unbeaded or unchimed variety, as illustrated in Fig. 3 of the drawings, this being done without any variation in the nature of the packaging unit **32**, per se. Here there is a tight frictional engagement with the can surfaces across the top of the cans C′, i.e., by marginal edge **23**, and around the curved outer surface area of the can bodies, i.e., by the shorter, parallel marginal edges **24** and the inclined connecting margins **25**. The fold zones are, as in the embodiment of Fig. 2, drawn snugly inwardly between cans C′ in order to establish this frictional gripping relation of the package unit and can.

It is evident that in a situation where such tight frictional gripping action exists, the abrasive effect of the paperboard material, particularly at the endmost cans C or C′ becomes pronounced. Notwithstanding the fact that the packaging unit is a single trip or one-way construction, intended to be destroyed in releasing the contents therefrom, it is imperative to prevent premature destruction by tearing or wear, particularly at these package ends. Reinforcing flanges **28** resist this action at the critical corner zones of the package. They also lend stability to the walls **18, 20** throughout the height thereof, as well as to the top and bottom panels, this being accomplished with an insignificant increase in the size of the blank **10** required.

The cutting away of the flanges **28** at the overlapped areas of the respective top forming panels **17, 21** means that central, transversely extending zones of uniform thickness are afforded at which the panels **17, 21** are overlapped and adhesively secured throughout their transverse dimension, across which the glue stripe extends. This is important, because the security of the adhesive seal depends upon the uniformity with which the panels are pressed together at the glue stripe. A bumping action at the sealer, occasioned by differing thicknesses of material in this zone, leads to non-uniformity of adhesion, which in turn produces insecurity of the seal, the tightness of which is relied on to hold the respective corner fold zones **11** through **14** in snugly embracing relation to the cans.

Being substantially overlapped on one another, the top panels **17, 21** afford two-ply thickness, further reinforced by adhesive, in the zone of registered finger holes **27** by which the package is grasped and lifted.

I claim:

1. A package including a given number of cylindrical objects having relatively flat ends and positioned side-by-side, a sheet wrapped about the opposite ends and sides of said objects, with the ends of the sheet joined to provide a container in the general form of a tube, the portions of said sheet extending across the ends of the objects being flat, and the portions of said sheet extending across the sides of the objects also being flat, each two such portions which are adjacent each other being joined by a diagonal part of said sheet, said diagonal parts each being defined by parallel preformed score lines and having object accommodating cut outs spaced in accordance with the spacing of said objects, said cut outs having side edge portions thereof which extend between said parallel score lines and converging toward each other and away from the portions of the sheet extending across the ends of the objects to conform approximately with the shape of the sides of said objects at the ends of the latter, whereby said diagonal parts are diagonally aligned about the corners of said objects with the corners of the objects extending through said cut outs and with the sides of said objects engaged by the converging edge portions of the cut outs whereby to hold the objects in said tube.

2. A multiple panel blank suitable for forming into a tube-like carton for packaging cylindrical objects having a predetermined diameter and relatively flat ends, said blank having parallel transverse score lines defining five wall forming panels and four corner connecting panels with a wall forming panel at each end of said blank and said corner connecting panels extending between adjacent wall forming panels, said corner connecting panels each having a plurality of object receiving openings spaced transversely of the blank and extending between the transverse score lines defining the edges of the panels, said object receiving openings each being relatively wide at the side thereof which extends along one of said score lines and decreasing in width toward the other score line, whereby said blank may be formed into a tube about a plurality of said objects positioned side-by-side with the portions of said blank extending across the ends of said objects constituting wall forming panels positioned flat

against the ends of the objects, and the portions of said blank extending across the sides of said objects constituting wall forming panels positioned flat against said sides and said corner connecting panels extending diagonally between said flat wall forming panels with portions of said objects extending through said openings and in engagement with the edges thereof.

3. A package comprising a plurality of cans or like objects arranged in row formation and a sheet wrapped about the ends of said objects on the exposed sides thereof with the ends of the sheet being joined to form a tube having oppositely disposed wall panels extending at the ends and exposed sides of the objects with portions thereof being flat, each two such wall panels which are adjacent each other being joined by a diagonal corner forming object gripping panel which is defined by a pair of parallel spaced, transverse crease lines forming the edges of the adjoining wall panels, said diagonal panel having apertures spaced in accordance with the spacing of the objects through which portions of the objects project, said apertures extending in said diagonal panel between said pair of crease lines and having a shape approximating the shape of the section of the object which lies in the plane of the diagonal panel so that portions of the exposed sides of the objects which project through the apertures are engaged by the edges thereof.

4. A package comprising a container and a plurality of cylindrical objects assembled in the container in row formation with their axes disposed vertically, said container being formed from a sheet of paperboard which is cut, creased and folded into a tube having oppositely disposed side wall panels and top and bottom wall panels extending between the top and bottom edges of the side wall panels, relatively narrow corner forming panels connecting corresponding edges of said side wall panels with one of the wall forming panels which extends between said edges, said corner forming panels being defined by parallel spaced crease lines which form the edges of the adjoining wall panels, said corner forming panels extending diagonally between the edges of said adjoining wall panels and having apertures spaced therein which receive projecting end portions of said cylindrical objects, said apertures having side edges which converge in the direction of the side wall panels so as to grip portions of the cylindrical surfaces of the objects adjacent the ends of said objects.

5. A package including a given number of cylindrical objects which are positioned side-by-side, a sheet wrapped about the opposite ends and sides of said objects, with the ends of the sheet joined to provide a container in the general form of a tube, portions of said sheet extending at the ends of the objects being flat and portions of said sheet extending at the sides of the objects also being flat, each such two portions which are adjacent each other being joined by a diagonal part of said sheet, said diagonal part being defined by parallel preformed score lines and having object accommodating cut outs spaced in accordance with the spacing of said objects, said cut outs extending therein and having side portions thereof converging towards each other and away from the portions of the sheet extending at the ends of the objects so as to conform approximately with the shape of the sides of the objects adjacent the ends of the latter, whereby said diagonal parts are diagonally aligned about the corners of the package with portions of the objects extending through said cut outs and engaged by the converging edge portions of the cut outs thereby to hold the objects in said tube.

6. A package including a given number of cylindrical objects which are positioned in side-by-side row forming relation, a sheet wrapped about the opposite ends and sides of said objects, with the ends of the sheet joined to provide a container in the form of a tube, portions of said sheet extending at the ends of the objects being flat and portions of said sheet extending at the sides of the objects also being flat, at least one of the flat portions of the sheet at one end of the objects being joined to the adjacent flat portions of the sheet at the sides of the objects by a diagonal part of the sheet, said diagonal part of the sheet being defined by parallel preformed score lines and having object receiving cut outs spaced in accordance with the spacing of said objects, said cut outs having side edge portions converging toward each other and away from the portion of the sheet which extends at the ends of the objects so as to conform approximately with the shape of the sides of the objects adjacent the ends of the latter, whereby portions of the objects which extend through said cut outs are engaged by the converging edges of the cut outs so as to hold the objects in the tube.

7. A multiple panel blank suitable for forming into a tube-like carton for packaging cylindrical objects of predetermined diameter, said blank having parallel transverse score lines defining top, bottom and side wall forming panels and corner connecting panels, with said corner connecting panels extending between adjacent wall forming panels, at least one of said corner connecting panels having a plurality of object receiving cut outs which are spaced transversely of the blank and which extend in the area between the transverse score lines defining the edges of the panel, said object receiving cut outs each being relatively wide at a side thereof which extends along one of said score lines and increasing in width toward the other score line, whereby said blank may be formed into a tube about a plurality of said objects which are assembled in side-by-side row forming relation with portions of the blank extending across the ends and sides of said objects to constitute a flat wall forming panel and said corner connecting panels extending between said flat wall forming panels with portions of said objects extending through said cut outs and in engagement with the edges thereof.

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