

July 26, 1960

M. I. WILLIAMSON
SINGLE CAN CARRIER

2,946,620

Filed July 19, 1957

3 Sheets-Sheet 1

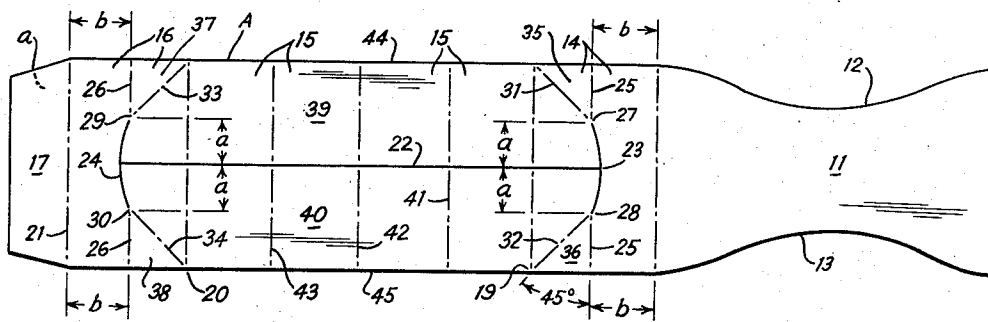


Fig. 1

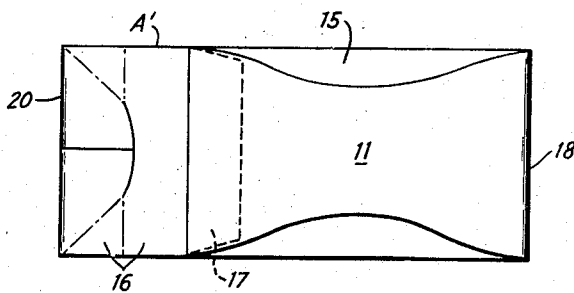


Fig. 2.

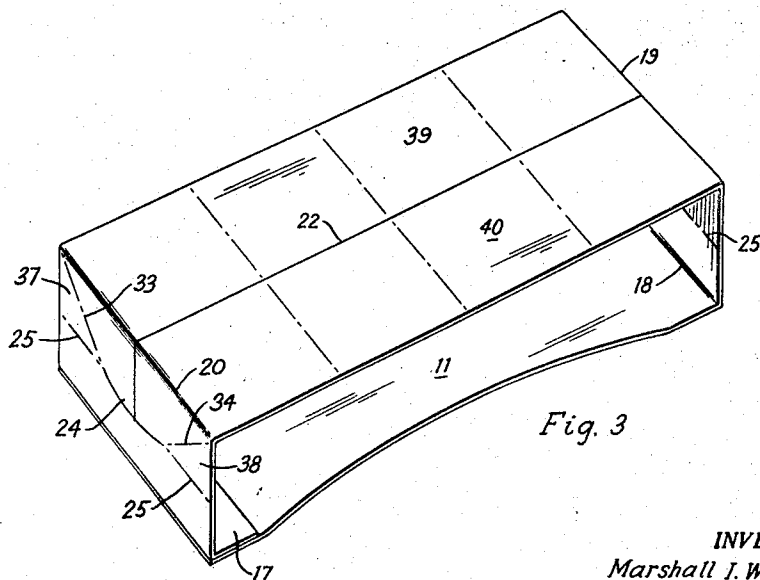


Fig. 3

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3 Sheets-Sheet 2

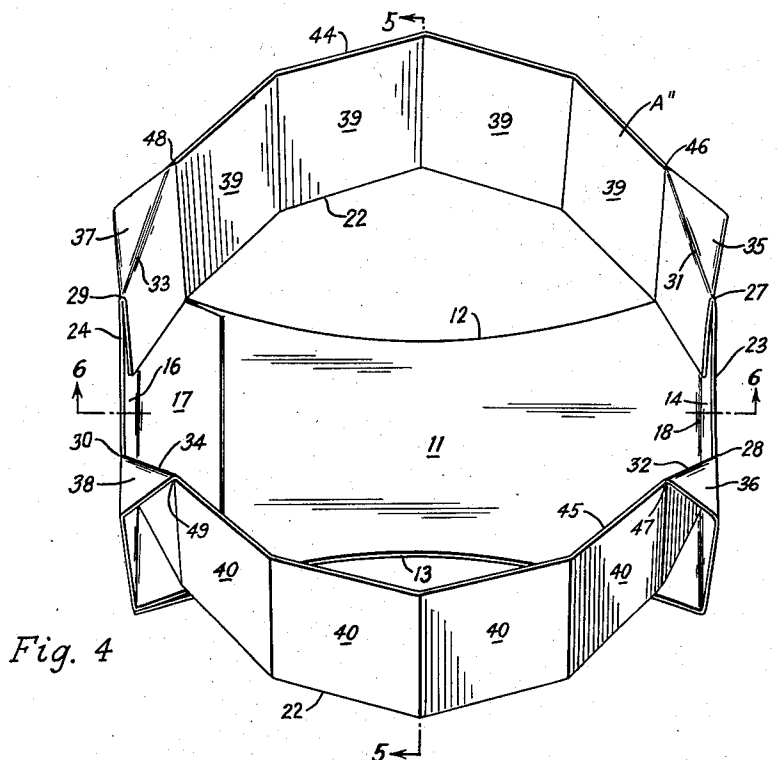


Fig. 4

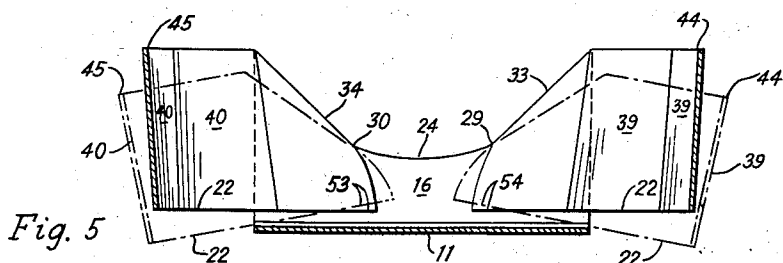


Fig. 5

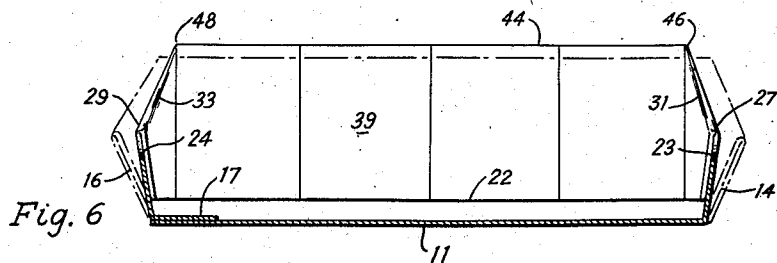


Fig. 6

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3 Sheets-Sheet 3

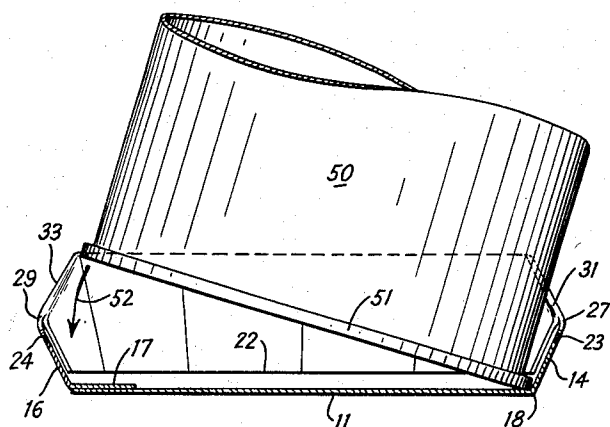


Fig. 7

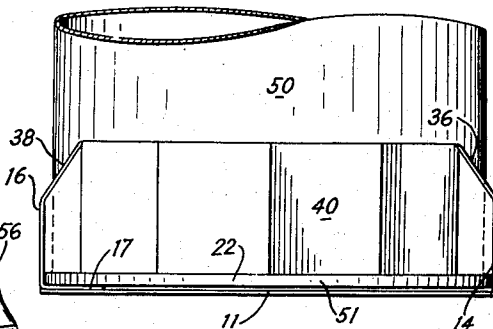


Fig. 8

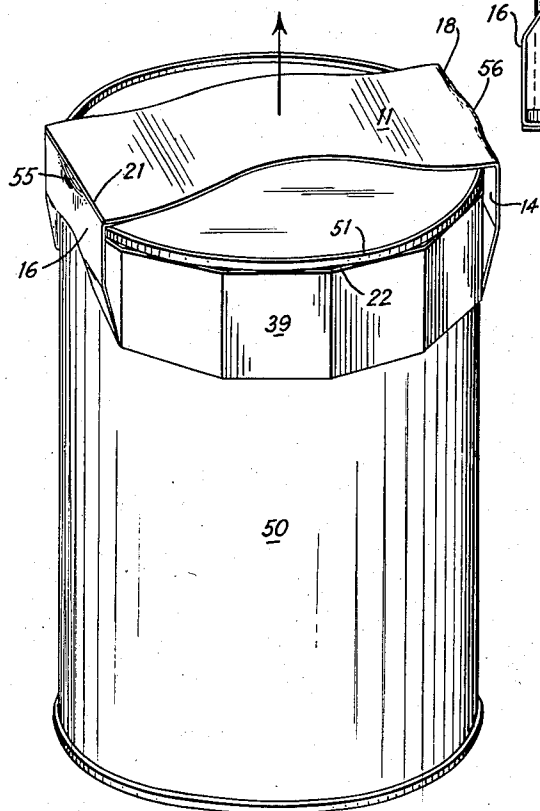


Fig. 9

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2,946,620

SINGLE CAN CARRIER

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Filed July 19, 1957, Ser. No. 672,905

7 Claims. (Cl. 294—87.2)

This invention relates to improvements in carriers or handles for chime-end cans and similarly shaped receptacles characterized by a rim, bead, or projection at at least one end having a diameter slightly larger than the body of the receptacle.

The most commonly used form of receptacle is the chime-end tin can. Cans of a capacity exceeding 1000 cc. are widely used for foods, beverages, oil, grease, paint and other products. They are somewhat awkward to handle because of their weight and their diameter which is of the order of four inches and often larger. Cans containing heavy merchandise, such as lead paint, are particularly inconvenient to handle unless equipped with a bail which increases the cost of the can considerably.

Similar considerations apply to jars of comparable size, except that jars are even heavier than tin cans because of the added weight of the glass.

The present invention provides a handle of foldable sheet material, preferably paperboard, which can be attached to a chime-end can or a similarly shaped receptacle and which holds the receptacle securely without the use of adhesive or supplementary fastening means between the handle or carrier and the receptacle to which it is applied.

Basically, handles or carriers incorporating the present invention comprise a top or handle panel by which the device is grasped and carried. Downwardly extending side walls are articulated to the top panel, and straps extend from the side walls for peripherally engaging the receptacle immediately below the chime-end or comparable projection.

The handle or carrier may be prefabricated in the form of a preglued flat collapsed blank structure and is readily prepared for attachment to a receptacle by a simple folding operation preparatory to slipping the straps over the end of the receptacle.

In the design and construction of a handle or carrier of the aforementioned type a problem is encountered by reason of the fact that the straps must encircle the body of the receptacle snugly, yet permit the larger chime-end or similar portion of the receptacle to be inserted between the straps.

Since paperboard is not elastic, and since it is not practicable to apply the straps around the receptacle body and then glue the straps to obtain an enclosure of a diameter less than the chime-end, it is manifestly not a simple matter to obtain a fit between handle and receptacle snug enough to prevent the receptacle from slipping out of the handle or carrier.

The present invention solves this problem by providing a construction in which the mouth of the circumferential strap assembly may be distended temporarily for easy insertion of the end of the receptacle, but is automatically reduced in diameter by insertion of the receptacle, whereafter the mouth cannot be enlarged again.

As will be seen from the following description a tiltable hinge panel is incorporated in the handle or carrier structure which, upon tilting, permits the mouth of the strap assembly to be distended to a diameter considerably larger than the diameter of the largest portion of the

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receptacle. Subsequent elimination of the tilt of the hinge panel, which takes place automatically by reason of insertion of the receptacle, causes the straps to be drawn tight about the circumference of the receptacle, thereby securely locking the receptacle in the carrier so that the receptacle portion of largest diameter, for example, the can-chime, cannot be withdrawn.

The gripping action of the straps is preferably supplemented by an arrangement in which the application of the lifting force at the handle or top panel automatically pulls the straps the tighter, the greater the lifting force. At the same time the lifting force exerted at the handle is so distributed that there is no danger of tearing of the board at any of the cuts or fold lines incorporated in the construction.

These and various other structural details, features, and advantages of this invention will appear more fully from the detailed description which follows accompanied by drawings showing, for the purpose of illustration, a preferred embodiment of the invention. The invention also resides in certain new and original features of construction and combination of elements hereinafter set forth and claimed.

Although the characteristic features of this invention which are believed to be novel will be particularly pointed out in the claims appended hereto, the invention itself, its objects and advantages, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part of it, in which:

Figure 1 is a plan view of a flat blank of paperboard from which a carrier or handle may be made, the back side of the blank facing the observer;

Figure 2 is a plan view of the blank of Figure 1 after a folding and gluing operation resulting in the formation of a collapsed tubular structure;

Figure 3 is a perspective view of the tubular structure of Figure 2 after squaring;

Figure 4 is a perspective view of the structure of Figure 3 after a further folding operation resulting in the formation of peripheral container-engaging straps;

Figure 5 is a sectional elevation of the structure of Figure 4, the section being taken on line 5—5;

Figure 6 is a sectional elevation of the structure of Figure 4, the section being taken on line 6—6;

Figure 7 is an elevational view corresponding to Figure 6 illustrating the insertion of a can into the carrier or handle structure;

Figure 8 is an elevational end view of the structure of Figure 7 after insertion of the can; and

Figure 9 is a perspective view of the handle attached to a can, ready for use.

In the following description and in the claims various details will be identified by specific names for convenience. The names, however, are intended to be generic in their application. Corresponding reference characters refer to corresponding parts in the several figures of the drawings.

The drawings accompanying, and forming part of, this specification disclose certain specific details of the invention for the purpose of explanation of broader aspects of the invention, but it is understood that the details may be modified in various respects without departure from the principles of the invention and that the invention may be applied to other structures than the one shown.

The blank A of Figure 1 consists of foldable sheet material, such as paperboard, and may be cut and scored in multiple from rolls or sheets of board on conventional cutting and creasing machines.

The blank comprises a top panel 11 which may be

recessed along its side edges 12 and 13 to provide a conveniently shaped hand grip portion of the carrying device. The blank further comprises a first side wall 14, a main panel 15, a further side wall 16 and a glue lap 17. The several panels are articulated to one another along fold lines of which fold line 18 may be termed a top fold line, 19 and 20 main fold lines, and 21 a further top fold line.

A central cut 22 extends the length of the main panel 15 and extends beyond the top fold lines 19 and 20 into the body of the side walls 14 and 16. The central cut 22 terminates at transverse side cuts 23 and 24 in the side walls 14 and 16, respectively.

The side walls are further traversed by intermediate folding scores 25 and 26. These intermediate folding scores are parallel to the top and main fold lines and determine the location of the transverse side cuts 23 and 24 which extend between apex points 27 and 28 and between apex points 29 and 30. These apex points may be considered the ends of the folding scores 25 and 26 and also the ends of the transverse cuts 23 and 24. The cuts 23 and 24 may be straight, but are preferably of arcuate shape, bowed towards the top fold lines 18 and 21 for reasons which will appear later.

The apex points lie closer to the central cut 22 than to the top fold lines 18 and 21, the difference in the distances being at least one-sixteenth of an inch, and preferably of the order of an eighth of an inch. At any rate, the difference in the two distances should be at least equal to the axial dimension of the chime of the can to be held in the carrier or handle. The drawing shows that *a* representing the distance of the apex points from the central cut 22, is less than *b* representing the distance of the apex points from the top fold line.

Diagonal scores 31, 32, 33 and 34 extend from the apex points 27, 28, 29 and 30 towards the main fold lines 19 and 20, the angle of the diagonal scores with respect to the intermediate folding score being 45 degrees.

The respective intermediate folding scores 25 and 26 and the diagonal scores define substantially triangular panels 35, 36, 37 and 38.

The central cut 22 divides the main panel into two straps 39 and 40, and each strap may be subdivided into a plurality of strap panels by transverse scores 41, 42 and 43. In the illustrated embodiment there are four strap panels resulting, as will later be seen, in an enclosure representing a twelve-sided polygon.

The blank A of Figure 1 may be converted into a carrier or handle structure as follows:

Adhesive *a* is first applied to the underside of the glue lap 17 and the glue lap and the side wall 16 are then folded about the fold line 20 to bring the side wall 16 over the main panel 15. Substantially simultaneously, or shortly thereafter, the top panel is folded about the top fold line 18 to bring its end portion into adhesive engagement with the coated surface of the glue lap 17.

A flat collapsed tubular structure A' results. The tubular blank A' may be shipped and stored in flat condition and may quickly be converted into a handle or carrier structure for attachment to a chime-end can without further gluing operations. This is done as follows:

The tubular blank structure A' is first squared as shown in Figure 3. Next, the two straps 39 and 40 are folded about their respective diagonal fold lines 31, 32, 33 and 34. The resulting structure A'' is shown in Figure 4. The straps 39 and 40 are articulated to the side walls 14 and 16 by the triangular hinge panels 35, 36, 37 and 38. These hinge panels are unique in permitting the mouth of the handle or carrier structure to be distended. The mouth is represented by the edges 44 and 45 which previously were the side edges of the blank. There are two principal ways in which the enlargement of the mouth may be accomplished.

Referring first to Figure 5, the straps 39 and 40 may

be swung downwardly, as indicated in broken lines. The pivots of this displacement are the apex points 29 and 30. It is quite evident that the distance between the edges 44 and 45 is greatly enlarged so as to permit insertion of a can without danger of striking the edges 44 and 45.

A further way of enlarging the mouth is illustrated in Figure 6. It involves basically an outward slanting of the lower portions of the side walls 14 and 16, accompanied by an inward slanting of the hinge panels 35, 36, 37 and 38. As a result the distance between the cut edges 23 and 24 is enlarged.

Referring now to Figure 4 it is readily seen that an enlargement of the diameter in the direction of the line 5—5 and an enlargement of the diameter in the direction of the line 6—6 permits a cylindrical object, such as a chime-end can, to be inserted without difficulty. It is also readily seen that if the cylindrical object, such as the can-chime, strikes the lower portion of the straps 39 and 40 adjacent the edge 22, it tends to right the structure towards the position shown in solid lines in Figure 5. This action occurs because the engagement with the straps 39 and 40 is at a point below the apex points 29 and 30 which act as pivots. The righting of the straps 39 and 40 automatically causes the straps to tighten about the inserted article.

The triangular shape of the hinge panels 35, 36, 37 and 38 assists in the tightening in a unique way. It is readily apparent from Figures 4 and 6 that the points 46, 48 and 47, 49 may be brought closer together by increasing the slant of the triangular panels 35, 36, 37 and 38. Conversely, the points 46, 48 and 47, 49 are moved apart by reducing or eliminating the slant of the triangular panels. The slant of the panels is automatically reduced by the righting of the straps 39 and 40. This unique action is the result of the triangular shape of the hinge panels whose pivot points are the apexes 27, 28, 29 and 30, but whose opposite sides have a horizontal projection which is large for great slope and small for small slope angles and zero if the hinge panels are vertical. By the same action righting of the straps 39 and 40 tends to draw the side walls 14 and 16 together.

In the drawings a chime-end can 50 is shown to represent one form of cylindrical receptacle to which the handle structure may be attached. The can has a chime 51 of a diameter larger than the diameter of the can body. The difference in diameter is of the order of 2 to 3 millimeters and the axial dimension of the chime is of the order of 2½ millimeters, slightly more than one-sixteenth of an inch and slightly less than one-eighth of an inch. The latter dimension determines the spacing of the engaging strap edge 22 from the top panel 11. It is evident, however, that other forms of receptacles having a similar projecting rim, for example, a jar with a top may be inserted and held in a similar manner.

A preferred manner of inserting the receptacle into the carrier structure is shown in Figure 7.

The can 50 is held at an angle and is inserted into the carrier structure until the chime 51 is seated at the fold 18 between the top handle panel 11 and the side wall 14. The can is then righted as indicated by the arrow 52 until the edge 22 snaps above the chime 51. During the final phase of the inserting motion the side walls 14 and 16 are righted, as previously described, with the result that the enclosing straps are drawn tightly about the can.

The can may also be inserted in such a way that its lowermost portion, considering the can in its tilted position, is placed against one of the straps instead of against a side wall. In Figure 5 the strap 39 is shown in inclined position and the can may be inserted with the cylindrical can wall substantially parallel to the inclined strap 39 shown in broken lines.

The arcuate shape of the cuts 23 and 24 serves a mul-

multiple purpose. Referring first to Figure 7 it is evident that the portion of the chime immediately above the arrow 52 has additional clearance with respect to the edge 24 if the cut is arcuate instead of straight. The arcuate shape therefore facilitates insertion of the can. From Figure 5 it is further evident that the ends 53 and 54 of the straps are in closer proximity if the cut is arcuate than if it were straight. The arcuate shape of the cut, therefore, extends the length of the engaging edge 22 near the center of the side walls 14 and 16.

Figure 8 shows the can 50 in inserted position in which the edge 22 of the straps securely locks the can chime 51. The can is then inverted as shown in Figure 9, and may now be lifted up and carried by the top panel 11 which is shaped as a handle.

When lifted by the handle, the portions of the chime in line with the center line of the top panel 11 tend to bulge the side walls at the points 55 and 56. These bulges provide additional frictional engagement between the handle or carrier and the can itself. Also, the portions of the side walls 14 and 16 adjacent the top fold lines 18 and 21 are moved slightly beyond the vertical position with the result that the straps are drawn even tighter around the can. The frictional engagement at the bulges relieves the straps proper of a portion of the weight to be carried, thus reducing the danger of tearing of the board at the apex point.

It is evident that various modifications may be made in the basic structure. For example, shapes of the handle 11 may be altered, the number of sides of the polygon may be varied, and numerous other modifications be made without departing from the essence of the invention. For cans of a diameter of approximately four inches a 12-sided polygon, as shown in the drawings, has proved advantageous. The number of sides determines the number of engagement points which may be varied according to the diameter of the can or the weight of its contents.

Instead of inserting a can into the handle structure as shown in Figures 5 to 8, the handle structure of Figure 4 may also be slipped over the top of an upright can without any difficulty. This may be the most convenient form of application involving all the distending and contracting actions previously described.

The carrier offers numerous advantages beyond its low cost. It covers and obscures little of the conventional can label, but provides additional space for descriptive or promotional matter not only along its peripheral portion but also at the top of the can which normally does not carry descriptive matter. It is superior to the conventional wire bail in that it permits closely placed cans to be easily picked up by the handle in distinction from the depending bail which is normally inaccessible between cans.

What is claimed is:

1. A carrier for a single chime-end can or similarly shaped receptacle, the carrier consisting of a single blank of paper board and comprising, a pair of opposite side walls; a top panel between, and articulated to, said side walls along parallel top fold lines spaced a distance substantially equal to the diameter of the chime-end of the can; a main panel between, and articulated to, said side walls along two parallel main fold lines spaced a distance substantially equal to the diameter of the chime-end of the can, each side wall having an intermediate folding score in it parallel to, and between, said top and main fold lines, said main panel having a central cut through it extending at right angles to, across, and beyond said main fold lines into the body of the side walls at least as far as said intermediate folding scores, said central cut dividing said main panel into two straps of substantially equal width, said side walls having side cuts in them extending from, and substantially transverse to, the end of said central cut, the ends of the side cuts lying on said intermediate folding score and marking

apex points, the said side walls further including diagonal scores extending in a direction of 45 degrees with respect to said intermediate score towards said main fold line in a direction away from said central cut, said diagonal scores and said intermediate score including a hinge panel between them, the straps being foldable about said diagonal fold lines into a position upright with respect to said top panel in which position the straps form a circumferential enclosure for the can body, the straps having two bordering cut edges, one edge being a can-chime engaging edge formed by said central cut, the other edge being the side edge of the blank and forming a cell mouth into which a chime-end can may be inserted, the mouth being expansible for easy insertion of the can in the position in which said hinge panels are slanted with respect to said side walls and in which position the distance between said side cuts is larger than the can diameter, the slant being automatically reduced by insertion of the can forcing the straps into upright position, thereby reducing the circumference of the mouth and locking the can, the slant being further reduced by a lifting force applied to the top panel.

2. A carrier for a single chime-end can or similarly shaped receptacle, the carrier consisting of a single blank of paperboard and comprising, a pair of opposite side walls; a top panel between, and articulated to, said side walls along parallel top fold lines spaced a distance substantially equal to the diameter of the chime-end of the can; a main panel between, and articulated to, said side walls along two parallel main fold lines spaced a distance substantially equal to the diameter of the chime-end of the can, each side wall having an intermediate folding score in it parallel to, and between, said top and main fold lines, said main panel having a central cut through it extending at right angles to, across, and beyond said main fold lines into the body of the side walls at least as far as said intermediate folding scores, said central cut dividing said main panel into two straps of substantially equal width, said straps being scored transversely, thereby subdividing the straps into individual strap panels, said side walls having side cuts in them extending from, and substantially transverse to, the ends of said central cut, the ends of the side cuts lying on said intermediate folding score and marking apex points, the distance of the apex points from the central cut being at least one-sixteenth of an inch less than the distance of the apex point from the nearest top fold line, the said side walls further including diagonal scores extending in a direction of 45 degrees with respect to said intermediate score towards said main fold line in a direction away from said central cut, said diagonal fold lines and said intermediate score including a hinge panel between them, the straps being foldable about said diagonal fold line into a position upright with respect to said top panel in which position the straps form a circumferential polygonal enclosure for the can body, the corners of the polygon being the transverse scores of the straps, the straps having two bordering cut edges, one edge being a can-chime engaging edge formed by said central cut, the other edge being the side edge of the blank and forming a cell mouth into which a chime-end can may be inserted, the mouth being expansible for easy insertion of the can in the position in which said hinge panels are slanted with respect to said side walls and in which position the distance between said side cuts is larger than the can diameter, the slant being automatically reduced by insertion of the can forcing the straps into upright position, thereby reducing the circumference of the mouth and locking the can, the slant being further reduced by a lifting force applied to the top panel.

3. A carrier for a single chime-end can or similarly shaped receptacle, the carrier consisting of a single blank of paperboard and comprising, a pair of opposite side walls; a top panel between, and articulated to, said side walls along parallel top fold lines spaced a distance sub-

stantially equal to the diameter of the chime-end of the can, the top panel being recessed along its side edges to provide a central handle portion of a width less than the length of said top fold lines; a main panel between, and articulated to, said side walls along two parallel main fold lines spaced a distance substantially equal to the diameter of the chime-end of the can, each side wall having an intermediate folding score in it midway between said top and the main fold lines, said main panel having a central cut through it extending at right angles to, across, and beyond said main fold lines into the body of the side walls, said central cut dividing said main panel into two straps of substantially equal width, said straps being scored transversely, thereby subdividing the straps into individual strap panels, said side walls having arcuate side cuts in them extending from, and substantially transverse to, the ends of said central cut, the ends of the side cuts lying on said intermediate folding score and marking apex points, the distance of the apex points from the central cut being at least one-eighth of an inch less than the distance of the apex point from the nearest top fold line, the arcuate cut being bowed towards said top fold lines, said side walls further including diagonal scores extending in a direction of 45 degrees with respect to said intermediate score towards said main fold line in a direction away from said central cut, said diagonal fold lines and said intermediate score including a hinge panel between them, the straps being foldable about said diagonal fold lines into a position upright with respect to said top panel in which position the straps form a circumferential polygonal enclosure for the can body, the corners of the polygon being the transverse scores of the straps, the straps having two bordering cut edges, one edge being a can-chime engaging edge formed by said central cut, the other edge being the side edge of the blank and forming a cell mouth into which a chime-end can may be inserted, the mouth being expansible for easy insertion of the can in the position in which said hinge panels are slanted with respect to said side walls and in which position the distance between said side cuts is larger than the can diameter, the slant being automatically reduced by insertion of the can forcing the straps into upright position, thereby reducing the circumference of the mouth and locking the can, the slant being further reduced by a lifting force applied to the top panel.

4. A blank of paperboard for forming a carrier for a single chime-end can or similarly shaped receptacle, the blank being substantially in the shape of an elongated rectangle and comprising a top panel, a side wall panel, a main panel, and a further side wall panel, the top panel and the further side wall panel being terminal panels of the blank, and a glue lap articulated to one of the terminal panels and adhesively secured to the other terminal panel, thereby producing a tubular structure, the top panel being articulated to the side wall panels along parallel top fold lines, and the main panel being articulated to the side wall panels along main fold lines, the side wall panels being of equal length, and the top and main panels being of equal length, the main panel being divided into two straps by a central cut extending at right angles to, across, and beyond said main fold lines into the body of the side wall panels, said side wall panels having an intermediate folding score in them parallel to, and between, said top and main fold lines, said intermediate folding score being centrally interrupted by an internal cut whose ends mark apex points, said central cut extending to said internal cuts, the said side wall panels further including diagonal scores extending from said apex points in a direction of 45 degrees with respect to said intermediate score towards said main fold line in a direction away from said central cut, said diagonal folding scores extending to the side edges of the blank, the distance from said apex points to the central cut being less than the distance from the apex points to the top fold lines, said straps being subdivided into individual

strap panels by spaced transverse scores extending at right angles to said central cut.

5. A blank of paperboard for forming a carrier for a single chime-end can or similarly shaped receptacle, the blank being substantially in the shape of an elongated rectangle and comprising a top panel, a side wall panel, a main panel, and a further side wall panel, the top panel and the further side wall panel being terminal panels of the blank, and a glue lap articulated to one of the terminal panels and adhesively secured to the other terminal panel, thereby producing a tubular structure, the top panel being articulated to the side wall panels along parallel top fold lines, and the main panel being articulated to the side wall panels along main fold lines, the side wall panels being of equal length, and the top and main panels being of equal length, the main panel being divided into two straps by a central cut extending at right angles to, across, and beyond said main fold lines into the body of the side wall panels, said side wall panels having an intermediate folding score in them parallel to, and between and equidistant from, said top and main fold lines, said intermediate folding score being centrally interrupted by an internal arcuate cut whose ends mark apex points, the internal cut being bowed towards the proximate top fold line, said central cut extending to said internal cuts, the said side wall panels further including diagonal scores extending from said apex points in a direction of 45 degrees with respect to said intermediate score towards said main fold line in a direction away from said central cut, said diagonal folding scores extending to the side edges of the blank, the distance from said apex points to the central cut being at least one-sixteenth of an inch less than the distance from the apex points to the top fold lines, said straps being subdivided into individual strap panels by spaced transverse scores extending at right angles to said central cut.

6. A blank of paperboard for forming a carrier for a single chime-end can or similarly shaped receptacle, the blank being substantially in the shape of an elongated rectangle and comprising a top panel, a side wall panel, a main panel, a further side wall panel and a glue lap, articulated to one another along parallel fold lines, the top panel being articulated to the side wall panels along top fold lines, and the main panel being articulated to the side wall panels along main fold lines, the side wall panels being of equal length, and the top and main panels being of equal length, the main panel being divided into two straps of equal width by a central cut extending at right angles to, across, and beyond the main fold lines into the body of the side wall panels, said side wall panels having an intermediate folding score in them parallel to, and between, said top and main fold lines, said intermediate folding score being centrally interrupted by an internal cut whose ends mark apex points, said central cut extending to said internal cut, the said side wall panels further including diagonal scores extending from said apex points in the direction of 45 degrees with respect to said intermediate score towards said main fold line in a direction away from said central cut, said diagonal folding scores extending to the side edges of the blank, the distance from said apex points to the central cut being less than the distance from the apex points to the proximate top fold line, said straps being subdivided into individual strap panels by spaced transverse scores extending at right angles to said central cut.

7. A blank as set forth in claim 6 in which the top panel is recessed along its side edges to provide a central handle portion of a width less than the length of said top fold lines.

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