Jan. 28, 1969 H. W. FORRER 3,424,368

ARTICLE CARRIER

Filed Feb. 10, 1967 Sheet 1 of 3

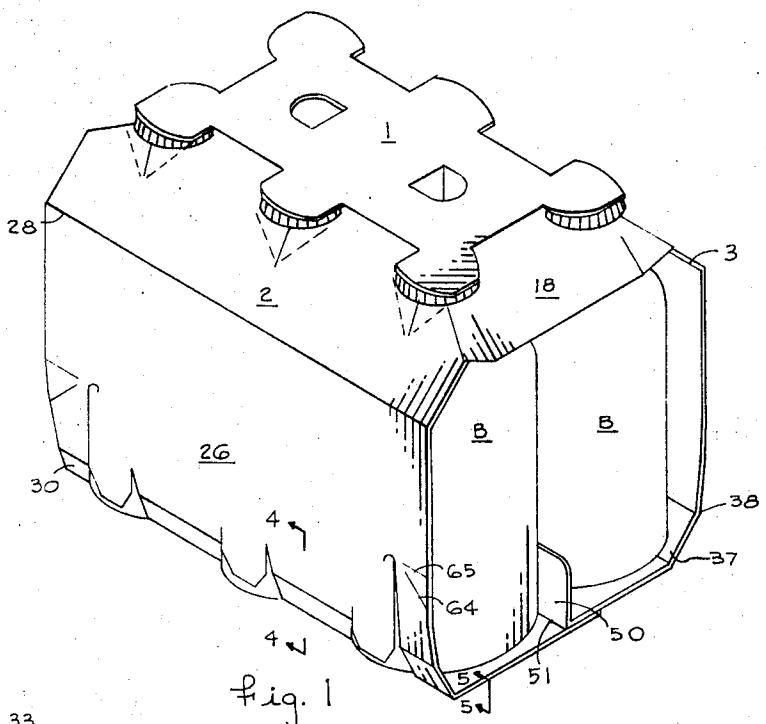


Fig. 1

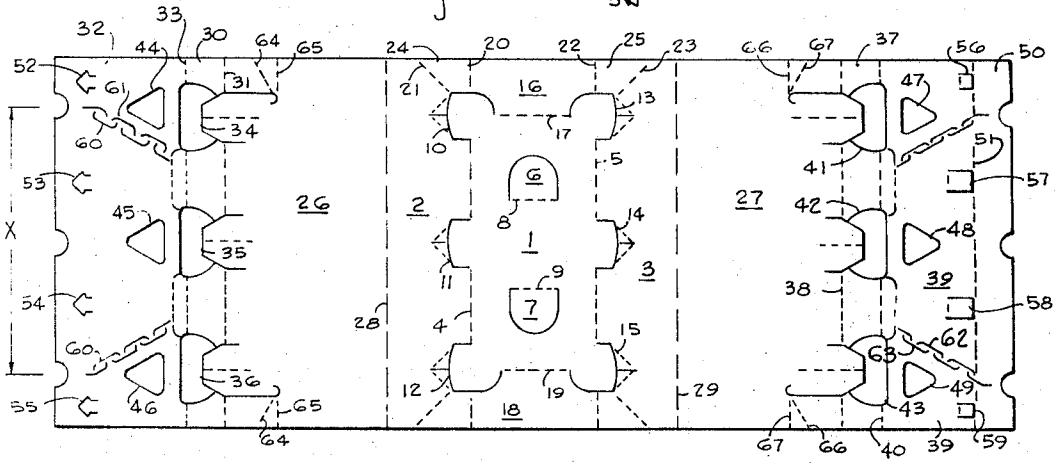


Fig. 2

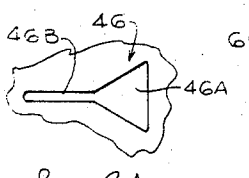


Fig. 2A

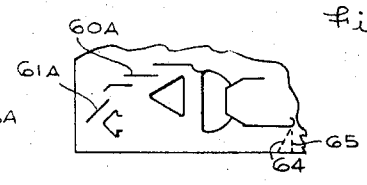


Fig. 2B

INVENTOR.
HOMER W. FORRER
BY Walter M. Rodgers
ATTORNEY

Jan. 28, 1969 H. W. FORRER 3,424,368

ARTICLE CARRIER

Filed Feb. 10, 1967 Sheet 2 of 3

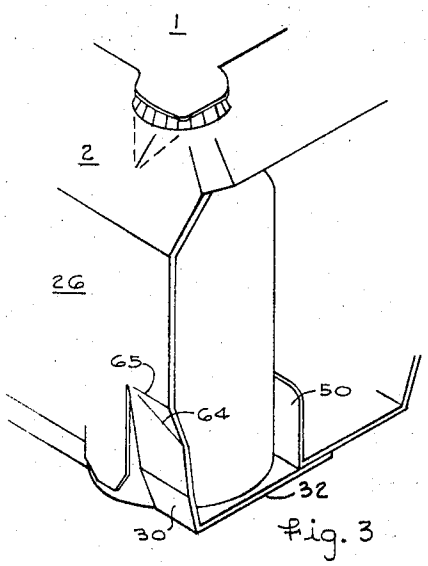


Fig. 3

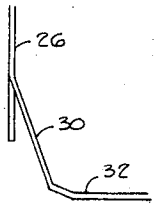


Fig. 4A

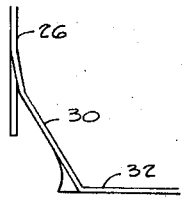


Fig. 4B

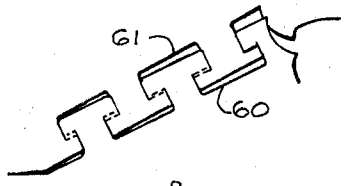


Fig. 2D

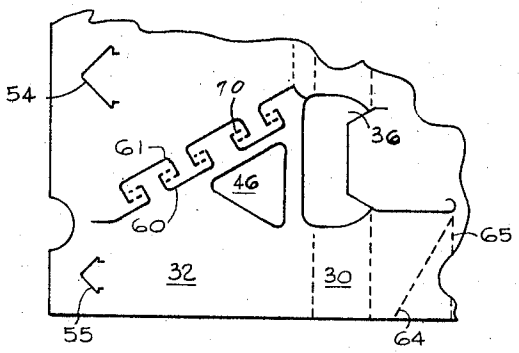


Fig. 2C

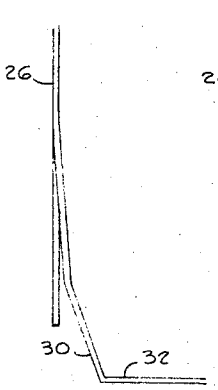


Fig. 5A

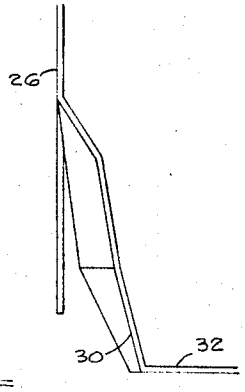


Fig. 5B

INVENTOR.
HOMER W. FORRER
BY Walter M. Rodgers
ATTORNEY

Jan. 28, 1969 H. W. FORRER 3,424,368

ARTICLE CARRIER

Filed Feb. 10, 1967 Sheet 3 of 3

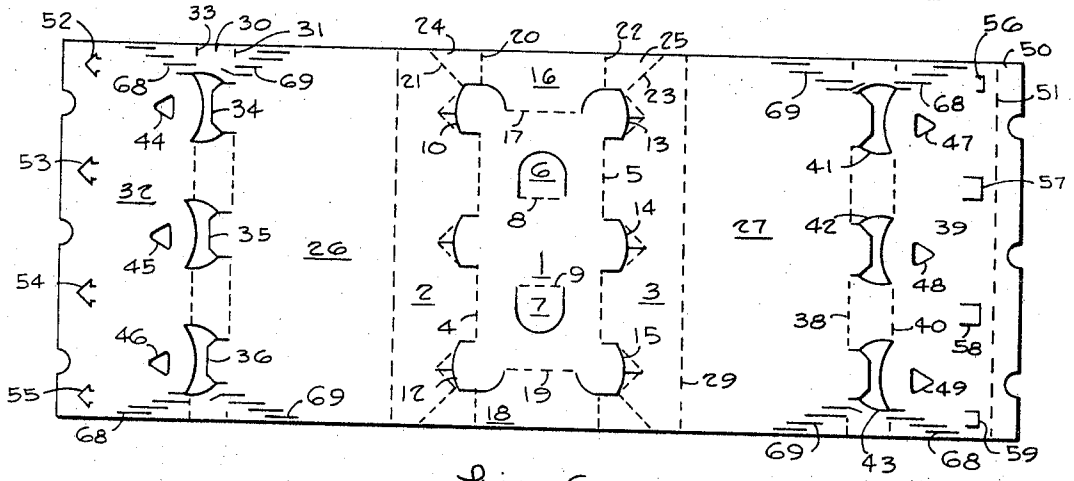


Fig. 6

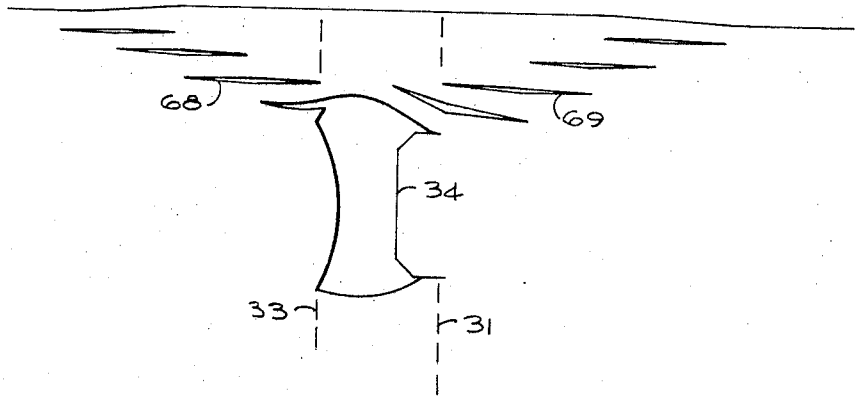


Fig. 6A

INVENTOR
HOMER W. FORRER
BY Walter M. Rodgers
ATTORNEY

United States Patent Office 3,424,368
Patented Jan. 28, 1969

3,424,368

ARTICLE CARRIER

Homer W. Forrer, Jonesboro, Ga., assignor to The Mead Corporation, a corporation of Ohio

Filed Feb. 10, 1967, Ser. No. 615,233
U.S. Cl. 229—40 9 Claims
Int. Cl. B65d 71/00, 85/54

ABSTRACT OF THE DISCLOSURE

An article carrier of the open end wrap-around type having top, bottom and side walls foldably joined together to form a tubular structure and having corner apertures formed at the junctions between the bottom wall and the side walls is provided with a plurality of slits in the bottom wall adjacent the corner apertures so as to render the size and configuration of the apertures adaptable to variations in the size of the packaged items.

Primary packages such as bottles, for example, are made in molds which ordinarily are of a metallic construction. Such molds are substantially permanent in nature although continued use over a long period of time results in tendency toward enlargement of the mold cavities in which the primary packages are formed. This tendency toward enlargement of course is due to many factors but may simply be considered as normal wear. If the mold cavities become larger with extended use, it follows that the bottles formed therein tend to become larger and larger as use of the molds continues.

Article carriers of the wrap-around type such for example as that disclosed in U.S. Patent 3,128,010 are provided with apertures at the corners thereof for receiving portions of the packaged articles. If bottles tend to increase in diameter and in circumference over a period of time for reasons set forth above, a wrapper of the wrap-around type whose dimensions remain fixed naturally becomes excessively tight as the bottle size gradually becomes greater and greater. Of course one solution to such a situation would be simply to change the die from which the wrapper is cut by enlarging the dimensions thereof in an appropriate fashion. Changing the dimensions of a die is a time consuming operation in itself and furthermore it is necessary to maintain adequate surveillance over the size of the primary packages in such manner that the die dimensions are changed before difficulties arise. Such surveillance, of course, requires an elaborate control system and generally is undesirable.

A principal object of this invention is to provide an improved article carrier of the wrap-around type wherein article receiving apertures at the corners of the wrapper are rendered automatically adjustable so as to accommodate changes in the diameter and circumference of the primary packages.

Still another object of the invention is the provision of an improved article carrier of the type wherein tightening apertures are formed in the overlapping end panels thereof and wherein enlargement of article receiving apertures is effected automatically in coordination with tightening operations of the wrapper.

The invention in one form as applied to a wrapper type carrier having corner openings comprises means for rendering the wrapper yieldable adjacent the corner openings to accommodate articles of varying sizes. If desired the yielding of the area adjacent the openings may be facilitated by the tightening of the wrapper as the package is formed.

For a better understanding of the invention, reference may be had to the following detailed description taken in conjunction with the accompanying drawings in which FIG. 1 is a perspective view of a set-up carrier which is constructed according to the invention; FIG. 2 is a plan view of a blank from which the carrier of FIG. 1 is formed; FIGS. 2A, 2B, 2C, and 2D represent detailed modifications of the blank depicted in FIG. 2; FIG. 3 is a fragmentary perspective view of one corner of the carrier depicted in FIG. 1 and which represents the manner in which a large article is accommodated by the carrier; FIGS. 4A and 4B are fragmentary sectional views taken along the line 4—4 in FIG. 1; and which shows the carrier as used in conjunction with a small bottle as in FIG. 4A and with a large bottle as in FIG. 4B; FIGS. 5A and 5B are fragmentary cross sectional views taken along the line designated 5—5 in FIG. 1 and represent a carrier as applied to both small and large bottles respectively; FIGS. 6 and 6A are plan views of a carrier blank such as is depicted in FIG. 2 and which represent a modification of FIG. 2.

With reference to the drawings the numeral **1** designates a top panel of the carrier while the numerals **2** and **3** represent sloping shoulder portions which are foldably joined to the top panel **1** along fold lines **4** and **5** respectively. Formed in top panel **1** are a pair of finger gripping tabs **6** and **7** which are struck out of top panel **1** and are foldably joined thereto along fold lines **8** and **9** respectively. Slits **10, 11** and **12** are struck out of sloping panel **2** while similar slits **13, 14** and **15** are struck out of sloping panel **3**. These slits **10–15** receive the caps of the packaged bottles B in a manner well known in the art and serve to enhance package stability. End panel **16** is foldably joined to top panel **1** along a fold line **17** while end panel **18** is foldably joined to top panel **1** along fold line **19**. Score lines **20, 21, 22** and **23** are formed in the blank as shown in FIG. 2 and serve to define a pair of end panel supporting webs **24** and **25** in a manner well known in the art. Similar structure is shown in conjunction with end panel **18** but a detailed description thereof is not deemed necessary.

Carton side walls **26** and **27** are foldably joined to sloping panels **2** and **3** respectively along fold lines **28** and **29**. Sloping panel **30** is foldably joined to the bottom edge of side wall **26** along fold line **31** while bottom lap panel **32** is foldably joined to sloping panel **30** along fold line **33**. Bottle receiving apertures **34, 35** and **36** are formed in sloping panel **30** and extend somewhat into lap panel **32**.

On the other side of the wrapper a sloping panel **37** is foldably joined to side wall **27** along fold line **38** and lap panel **39** is foldably joined to sloping panel **37** along fold line **40**. A plurality of bottle receiving apertures **41, 42** and **43** are formed in sloping panel **37** and extend somewhat into lap panel **42**.

In order to tighten the wrapper about a group of articles during a packaging operation, a plurality of tightening openings **44, 45** and **46** are formed in lap panel **32** and similar tightening openings **47, 48** and **49** are formed within lap panel **39**. As is well known, suitable machine elements enter the tightening apertures and draw the lap panels **32** and **39** toward each other in parallel relationship underneath the bottles B.

In order to form a medial separator for the bottles B in one row from the bottles in the other row a medial panel **50** is foldably joined to lap panel **39** along fold line **51**.

For the purpose of securing the wrapper about a group of articles B, a plurality of locking tabs **52–55** formed in lap panel **32** are driven through the openings defined by retaining tabs **56–59** respectively.

The articles B as depicted in FIG. 1 are of normal or initial size and represent bottles made when the metal molds in which the bottles are formed are relatively new. As the molds wear and become larger, the bottles formed therein become larger and larger in diameter and in circumference.

In accordance with this invention, the bottle receiving apertures such as **34**, **35**, **36** and **41**, **42** and **43** are constructed so that they may enlarge somewhat to accommodate larger bottles without weakening the wrapper and without changing the dimensional relationships of the various components of the wrapper. Thus in accordance with the invention, a plurality of slits **60** and **61** are formed in lap panel **32** and similar slits **62** and **63** are formed in lap panel **39**. In addition and in accordance with a feature of the invention, a pair of score lines **64** and **65** are formed on opposite sides of side wall **26** while similar score lines **66** and **67** are formed on opposite sides of side wall **27**.

Thus as is best shown in FIGS. 2 and 3 an oversized bottle as depicted in FIG. 3 tends to stretch the end portions of lap panel **32** due to the spreading of slits **60** and **61** and due to the buckling of the small triangle defined by the intersecting score lines **64** and **65**. This action in accordance with a main feature of the invention in effect enlarges the bottle receiving aperture **36** and accommodates a larger bottle such as is depicted in FIG. 3 without changing any dimensional relationship in the blank as shown in FIG. 2.

In accordance with another feature of the invention, the openings such as **34** and **36** may be enlarged by the tightening elements which enter the tightening openings **44** and **46**. To this end the center line spacing between tightening apertures **44** and **46** as represented by X in FIG. 2 is arranged in the blank so that it is somewhat shorter than the actual spacing between the machine elements which enter these openings so that as the elements enter and move in a parallel direction, the tendency is to stretch the lap panel **32** and to expand the slits **60** and **61**. Of course, this action automatically enlarges the apertures **34** and **36**. Stretching action of lap panel **32** also tends to enlarge the center aperture **35** but to a lesser degree, the orientation of the slits which define aperture **35** being initially configured and arranged so as to be slightly larger than would be required of the smallest bottle size. Of course the slightly larger configuration of the aperture **35** is feasible because the center bottle associated therewith is in effect captured within the wrapper and need not be as snugly engaged as do the end bottles.

In accordance with the modification depicted in FIG. 2A the tightening opening such as **46** is provided with a generally triangular shaped entry area **46A** and an elongated tightening area **46B**. Thus the entry area **46A** is sufficiently large to receive a machine tightening element even though the blank might be improperly positioned and upon tightening, the tightening element of the machine slides into the tightening portion **46B** of the opening **46** and thus imparts a predetermined degree of tension and stretching action to the lap panel **32**.

In accordance with the modification of the invention as depicted in FIG. 2B, straight line slits such as are depicted at **60A** and **61A** may be substituted for the U-shaped slits **60** and **61** as shown in FIG. 2. A similar slit arrangement is more fully shown in relaxed form in FIG. 6 and in expanded form in FIG. 6A. Generally speaking the slits are normal to the direction of expansion.

In accordance with the modification of the invention as depicted in FIGS. 2C and 2D, slits such as **60** and **61** are interrelated by a series of weakened lines **70** which facilitate effective stretching of the adjacent material.

While particular embodiments of the invention have been shown and described, the invention is not limited thereto and it is intended in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A wrap-around type article carrier for a plurality of articles arranged in a group in side-by-side rectilinear relation, said carrier comprising top and side walls and a pair of lap panels secured together to form a bottom wall. A plurality of apertures formed at the junctions between said bottom and side walls for receiving portions of the packaged articles respectively in order to secure the articles in position against undesired relative movement therebetween, areas of the wrapper immediately adjacent said apertures being yieldable automatically to change the size and configuration of said apertures whereby variations in the size of the packaged articles are accommodated without changing the dimensional relationships of the carrier components or of said apertures, and tightening openings formed in said lap panels to receive carrier tightening elements, at least some of said openings being disposed to one side of the paths of movement of their respective tightening elements so that said apertures are automatically expanded in coordination with tightening movement of said tightening elements.

2. A carrier according to claim **1** wherein at least one tightening opening in each lap panel is constructed with an entry part for receiving a tightening element and an elongated tightening part in communication with said entry part into which the tightening element moves to guide, tighten and position the lap panels during formation of the carrier.

3. A wrap-around type article carrier for a plurality of articles arranged in a group in side-by-side rectilinear relation, said carrier comprising spaced top, bottom and side walls, and a plurality of apertures formed at the junctions between said bottom and side walls for receiving portions of the packaged articles respectively in order to secure the articles within the wrapper against dislodgement therefrom and to fix the article in position against undesired relative movement therebetween, and a plurality of slits formed adjacent said apertures and at least a portion of each slit being generally parallel with at least a portion of another of said slits.

4. A carrier according to claim **3** wherein said slits are disposed in a generally normal relation to the direction of expansion of said apertures.

5. A wrap-around type article carrier for a plurality of articles arranged in a group in side-by-side rectilinear relation, said carrier comprising spaced top, bottom and side walls, and a plurality of apertures formed at the junctions between said bottom and side walls for receiving portions of the packaged articles respectively in order to secure the articles within the wrapper against dislodgement therefrom and to fix the articles in position against undesired relative movement therebetween, areas of the wrapper immediately adjacent said apertures being yieldable automatically to change the size and configuration of said apertures whereby variations in the size of the packaged articles are accommodated without changing the dimensional relationships of the carrier components or of said apertures, a plurality of score lines formed in said side walls along the edges thereof and immediately above the adjacent end ones of said apertures respectively to facilitate expansion of said end apertures.

6. A carrier according to claim **5** wherein a pair of score lines are formed in the carrier side walls and above each end aperture, one of each pair of score lines being substantially horizontal and the other of each pair of score lines being angularly disposed with respect thereto and said score lines of each pair being arranged to intersect each other.

7. A carrier according to claim 5 wherein a pair of score lines are formed in the carrier side walls and above each end aperture, the score lines of each pair of score lines being angularly disposed with respect to each other.

8. A carrier according to claim 5 wherein at least one slit is formed in each of said side walls and adjacent an end one of said openings and wherein each of said slits intersects at least one of the associated score lines.

9. A carrier according to claim 8 wherein at least one slit is formed in the bottom wall adjacent each of said end openings.

References Cited

UNITED STATES PATENTS

3,128,010	4/1964	Forrer	229—40 X
3,278,075	10/1966	Weiss	229—40 X
3,361,254	1/1968	Weiss	206—65

DAVID M. BOCKENEK, *Primary Examiner.*

U.S. Cl. X.R.

220—112; 206—65