A basket-style article carrier (200) that is collapsible when empty, and stackable when loaded with articles (C). A handle (H) is disposed on the side of the carrier (200) and includes an angled handle aperture (O). The handle aperture (O) defines a axis of elongation (Y), which is at an angle (A) with tubular axis (X) of the basket style carrier (200). The angle of the handle aperture (O) allows one to hold the basket-style carrier (200) at one's side with one's arm hanging substantially toward the floor such that the articles (C) remain in the carrier (200).
STACKABLE BASKET-STYLE ARTICLE CARRIER WITH ERGONOMIC SIDE HANDLE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Application No. 60/672,345, filed Apr. 18, 2005, the entirety of which is incorporated herein by reference.

FIELD OF THE INVENTION

[0002] This invention relates generally to basket-style carriers for packaging and transporting multiple articles, and more particularly to a stackable basket-style carrier with an ergonomic side handle.

BACKGROUND OF THE INVENTION

[0003] Basket-style carriers for carrying multiple articles, well known in the art, are useful for enabling consumers to transport, store, and access the articles for consumption. These carriers typically have a handle on top, thereby forming a conventional basket that typically includes a riser or partition extending upwardly from the bottom of the carrier from which the handle is fashioned. Such a handle placement prevents the carriers from being stackable, making their shipping and storing less efficient than other cartons. However, consumers appreciate basket-style carriers for their convenience of carrying. Therefore, there exists a need for a basket-style carrier that is stackable when loaded and still convenient for the consumer.

[0004] Article carriers with side handles are known. However, typical side handles provide a handle aperture that is essentially vertical, in the manner of the handle of a coffee mug. However, a basket-style carrier is typically carried by a user in one hand with the user’s arm essentially straight at his or her side. Such a carrier having a vertical side handle results in the basket-style carrier being disposed on its side when carried, allowing the articles to fall out. Thus, there exists a need for a stackable basket-style carrier with a side handle that allows a consumer to easily carry articles in the carrier.

SUMMARY OF THE INVENTION

[0005] The present invention overcomes the shortcomings of the prior art by providing a basket-style carrier that is stackable when loaded with articles and easy for the consumer to carry. More specifically, according to the various embodiments, the invention provides a collapsible, partitioned, basket-style carrier with a side handle having an ergonomically angled hand aperture.

[0006] The exemplary carrier is formed of a foldable sheet material and includes a tubular structure formed from prefolded several walls hingedly connected one to another. The tubular structure may have any configuration, including but not limited to, a cylindrical tube, a triangular tube, a rectangular tube, or a tube having a cross section that is a hybrid of any number of shapes. A bottom wall encloses one end of the tubular structure and provides a support surface for the articles enclosed by the carrier. The tubular structure defines a tubular axis that is normal to the plane of the bottom wall and extends longitudinally through the center of the tubular structure. In the exemplary embodiments described in more detail below, the tubular structure includes opposing side walls, opposing end walls, and a bottom wall. A composite handle structure is connected to a wall of the carrier, and preferably to at least one of the end walls. At least one partition divides the interior of the carrier into compartments, each compartment being for enclosing a single article or a group of articles and for strengthening the weight-bearing capacity of the carrier.

[0007] The ergonomics of the article carrier are greatly improved, as compared to prior art efforts, primarily by the inclusion of an angled handle aperture. The handle structure includes an elongate handle aperture disposed therethrough, the handle aperture defining an axis of elongation that is angled toward the open end of the article carrier so as to be at an acute angle with respect to the tubular axis of the carrier. Thus, when the carrier is loaded with articles and carried in a user’s hand that is hanging down at the user’s side, a weight bearing edge of the elongate handle aperture rests across the span of the user’s fingers, which are curled or otherwise disposed through the handle aperture. The acute angle is calculated to slant the articles in the carrier when the weight bearing edge of the handle aperture is substantially parallel to the floor. In this manner, the articles are disposed with bottom ends lower than top ends on a slope that is sufficient to prevent the articles from sliding out of the carrier. Thus, the user need not hold his or her arm at an uncomfortable angle or bend it at the elbow while carrying the loaded carrier.

[0008] According to one aspect, the exemplary basket-style article carrier is made vertically stackable when loaded with articles, at least in part by locating the handle on a side or end of the carrier rather than the top of the carrier. The stackability of the package is enhanced by providing carrier walls, panels, and partitions that are no taller than the height of the articles that are to be enclosed by the carrier. In other words, the intended articles, which may be cans, bottles, or the like, are at least as tall as the walls and partitions of a first carrier such that the bottom wall of a second carrier stacked on the first carrier will be supported by the tops of the intended articles. Alternatively, at least two of the carrier walls and/or partitions are rectangular and taller than the intended articles such that the upper edges of at least two of the carrier walls and/or partitions are parallel to the plane of the bottom wall. These rectangular and relatively taller walls form the base upon which a second carrier can be stacked.

[0009] The present invention overcomes the inconvenience of having a substantially vertical hand aperture by providing a more ergonomic handle with an angled hand aperture that prevents the contents of the carrier from sliding out of the carrier. Thus, the carrier of the present invention includes a handle that allows one to carry the basket-style carrier at one’s side while maintaining the articles in an essentially upright position in which the upper end of each article is positioned above the lower end of the article.

[0010] The height of the carrier, defined as the height of the tallest of the side walls, end walls, handle panel, and partition walls, is determined by the height of the intended articles. That is, to remain stackable, the height of the carrier is preferably substantially equal to or somewhat less than the height of the intended articles. In this manner, the intended articles are actually the weight-bearing support members for stacking additional carriers vertically. Thus, the carton walls and partitions may be fashioned from relatively less sturdy
materials. Alternatively, the height of the carrier is defined as the height of the tallest two or more equally tall walls, panels, and partitions, and is at least slightly greater than the height of the intended articles. According to this alternative, the tallest walls and partitions are sufficiently strong to support the weight of one or more carriers stacked atop the carrier. In all of the embodiments shown, the uppermost edge of the handle extends no higher than the uppermost edge of the tallest portion of the carrier or than the maximum height of the intended articles, although such embodiments are contemplated.

[0011] The present invention also provides for a blank for constructing the exemplary basket-style carrier with side handle. The blank generally includes multiple panels, tabs, and flaps hingedly connected to one another such that, in the erected carrier, the panels form the aforementioned opposed side walls, opposed end walls, bottom wall, one or more partitions, and composite handle panel with angled handle aperture. More specifically, the blank includes an upper and a lower elongate transverse section having first and second longitudinal axes that extend along the length of the blank. The first longitudinal axis extends along the upper edge of the upper transverse section, and the second longitudinal axis extends along the lower edge of the lower transverse section. The upper transverse section is preferably at least somewhat symmetrical to the lower transverse section, at least part of its lower edge coinciding with an axis of symmetry that is also at least partly coincident with the upper edge of the lower transverse section.

[0012] The upper and lower transverse sections each include several panels hingedly connected to one another along the respective longitudinal axis, including: a first end wall panel, a side panel hingedly connected to the first end wall panel, a second end wall panel hingedly connected to the side panel, and a handle panel hingedly connected to the second end wall panel. The upper handle panel includes an elongate handle aperture that has an axis of elongation disposed at an acute angle with respect to the upper longitudinal axis. The lower handle panel includes an elongate handle aperture that has an axis of elongation disposed at an acute angle with respect to the lower longitudinal axis. The upper and lower handle panels are hingedly connected to respective upper and lower reinforcing panels that, when the blank is erected into a finished carrier, cooperate with the handle panels to form a composite handle by which the carrier is lifted.

[0013] In certain embodiments, the upper and lower reinforcing panels are also hingedly connected to respective upper and lower partition wall panels that are arranged at one end of respective upper and lower transverse elongate sections that, when the blank is erected, form a composite partition panel for subdividing the interior of the carrier. The upper and lower partition wall panels also include partially detachable partition flaps that form additional partitions disposed substantially perpendicular to the composite partition panel for further subdividing the interior of the carrier. In the exemplary embodiments, the interior of the erected carrier is halved by the composite partition panel and quartered by the partition flaps, although various other divisions are contemplated.

[0014] According to another aspect of the invention, the blank is composed of a single sheet of foldable sheet material that can be easily assembled into a basket-style carrier that is preferably collapsible after assembly for ease of shipping to a loading facility.

[0015] The foregoing has broadly outlined some of the aspects and features of the present invention, which should be construed to be merely illustrative of various potential applications of the invention. Other beneficial results can be obtained by applying the disclosed information in a different manner or by combining the disclosed embodiments. Accordingly, other aspects and a more comprehensive understanding of the invention may be obtained by referring to the detailed description of the exemplary embodiments taken in conjunction with the accompanying drawings, in addition to the scope of the invention defined by the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] FIG. 1 is a plan view of an exemplary embodiment of a blank for forming a basket-style carrier of the present invention.

[0017] FIG. 2 is a perspective view of a basket-style article carrier formed from the blank of FIG. 1, shown in an assembled and non-collapsed condition.

[0018] FIG. 3 is a side elevation view of the carrier of FIG. 2.

[0019] FIG. 4 is a side elevation view of the carrier of FIG. 2, shown in an assembled and collapsed condition.

[0020] FIG. 5 is a perspective view of the carrier of FIG. 2, shown being grasped by a user’s hand.

[0021] FIG. 6 is a side elevation view of the carrier of FIG. 2, shown being held by a user’s hand, hanging downward from the user’s arm.

[0022] FIG. 7 is a perspective view of the carrier of FIG. 2, shown being held by a user’s hand, hanging downward from the user’s arm.

[0023] FIG. 8 is a plan view of the blank of FIG. 1, showing the relationship between the longitudinal axes of the exemplary blank and the axes of elongation of the handle apertures.

DETAILED DESCRIPTION OF THE INVENTION

[0024] As required, detailed embodiments of the present invention are disclosed herein. It must be understood that the disclosed embodiments are merely exemplary of the invention that may be embodied in various and alternative forms, and combinations thereof. As used herein, the word “exemplary” is used expansively to refer to embodiments that serve as illustrations, specimens, models, or patterns. The figures are not necessarily to scale and some features may be exaggerated or minimized to show details of particular components. In other instances, well-known components, systems, materials, or methods have not been described in detail in order to avoid obscuring the present invention. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the present invention.
Referring now to the drawings in which like numerals indicate like elements throughout the several views, the drawings illustrate certain of the various aspects of exemplary embodiments of a basket-style carrier according to the teachings of the present invention.

In the exemplary embodiment described herein, the invention provides a basket-style article carrier that is collapsible when empty and stackable when loaded. The handle, being on the side of the carrier rather than the top, allows multiple loaded carriers to be stacked. The angle of the handle allows one to hold the basket-style carrier at one’s side with one’s arm hanging substantially toward the floor, with the articles remaining in the carrier.

Referring to the exemplary embodiment illustrated in FIG. 1, the basket-style article carrier 200 (best shown in FIG. 2) is formed from blank 100—which is preferably a single sheet of suitable substrate. It is to be understood that, as used herein the term “suitable substrate” includes all manner of foldable sheet material such as cardboard, corrugated board, plastic, or the like. The terms “fold line” and “severance line” refer to all manner of printed lines indicating optimal fold or cut locations, frangible or otherwise weakened lines, perforations, a line of perforations, a line of short slits, a line of half-cuts, a cut line, scored lines, slits, any combination thereof, and the like.

Blank 100 generally includes a plurality of panels, each hingedly connected to at least one other panel. More specifically, FIG. 1 is a plan view of the blank 100 for forming an exemplary basket-style carrier 200, with the inside surface of the blank 100 shown. The opposite side (not shown) of the blank 100 is the outside surface of the carrier, which may be used as its art side for printing product information and other decorative and marketing information, such as logos. For discussion purposes, the blank 100 can be described in terms of respective upper and lower transverse elongate sections A1 and A2 that are connected to one another in a side by side arrangement; and in terms of three functional sections—a carrier section B1, a handle section B2, and a partition section B3. The carrier section B1 is preferably hingedly connected to the handle section B2, and the handle section B2 is optionally hingedly connected to the partition section B3. The components of the blank 100 are optimally arranged in part to form a footprint that yields a minimum amount of waste sheet material.

Each transverse section A1, A2 has a longitudinal axis that extends across the blank 100 from the left edge to the right. Upper transverse section A1 includes an end edge flap 102 hingedly connected to a first end wall panel 114, which is hingedly connected to a first side panel 132, which is hingedly connected to a second end wall panel 146, which is hingedly connected to a handle panel 150. Handle panel 150 is preferably further hingedly connected to reinforcing panel 170, which is hingedly connected to partition wall panel 180. In like fashion, lower transverse section A2 includes an end edge flap 104 hingedly connected to a first end wall panel 118, which is hingedly connected to a first side panel 138, which is hingedly connected to a second end wall panel 152, which is hingedly connected to a handle panel 154. Handle panel 154 is preferably hingedly connected to reinforcing panel 171, which is hingedly connected to partition wall panel 182.

At one end of blank 100, end edge flap 102 is hingedly connected along fold line 103 to end edge flap 104. End edge flap 102 includes a notch 105 along its end edge and a retention tab 107 on its side edge. End edge flap 104 preferably includes a congruent notch 106 along its end edge and a congruent retention tab 108 on its side edge. The notches 105, 106 are provided to maximize the surface area adjacent to the notches 105, 106 available for securing the end edge flaps 102, 104 to one another while minimizing the consumption of sheet material. End edge flap 102 and end edge flap 104 are preferably symmetrical about fold line 103 so as to conform to one another when folded into a face contacting configuration. In certain embodiments, a portion of material proximate to fold line 103 is removed, creating aperture 110, so as to facilitate folding along fold line 103 while reducing the thickness and congestion of the resulting fold.

End edge flap 102 is hingedly connected along fold line 112 to end wall panel 114. Similarly, end edge flap 104 is hingedly connected along fold line 116 to end wall panel 118. End wall panel 114 is hingedly connected along fold line 120 to side panel 132. Side panel 132 is hingedly connected along fold line 130 to bottom panel 128, which is hingedly connected along optional fold line 126 to bottom panel 124. Fold line 126 facilitates collapsing the assembled carrier 200, and thus may be eliminated if the carrier 200 is not to be collapsed after assembly. A notch 127 between bottom panels 128, 124 is bisected by fold line 126, and cooperates with retention tabs 107 and 108 to secure the carrier 200 in an erected condition. Side panel 132 is hingedly connected along fold line 134 to end wall panel 146. End edge flap 104 is hingedly connected along fold line 116 to end wall panel 118. End wall panel 118 is hingedly connected along fold line 122 to side panel 138, which is hingedly connected along fold line 140 to side edge flap 142. Side panel 138 is hingedly connected along fold line 144 to end wall panel 152. The inner edges of each of the panels 114, 132, 146, 118, 138, and 152 border aperture 136, and form the upper edges of the walls of the erected carrier 200.

The carrier section B1 is hingedly connected along fold lines 148 and 151 to the handle section B2 of blank 100. More specifically, end wall panel 146 is hingedly connected along fold line 148 to handle panel 150. End wall panel 152 is hingedly connected along fold line 151 to handle panel 154. Handle panel 150 is hingedly connected along fold line 153 to handle panel 154. Each of the handle panels 150, 154 includes a handle aperture 156, 160, respectively. The handle apertures 156, 160 can be enlarged and reinforced by means of respective partially detachable handle flaps 158, 162, which are partially defined by respective fold lines 159, 163. The handle flaps 158, 162 also cushion the user’s hand when folded over the raw edges of the weight bearing portion of each handle aperture 156, 160 that is gripped by the user’s hand. Handle apertures 156 and 160 are preferably symmetrical and equidistant from fold line 153, such that when folded toward one another along fold line 153, the handle apertures 156, 160 are in registry with one another and create a single handle aperture.

The structural integrity of handle panels 150, 154 is reinforced by reinforcing panels 170, 171. Handle panel 150 is hingedly connected along fold line 164 to reinforcing panel 170. Handle panel 154 is hingedly connected along fold line 166 to reinforcing panel 171. Reinforcing panels
170 and 171 include apertures 172, 176 that are at least as large as handle apertures 156, 160 and align with handle apertures 156, 160 so as not to obstruct or overlap the perimeter thereof, but are not necessarily symmetrical. The apertures 172, 176 may in fact be larger than handle apertures 156, 160 to provide reinforcement, while minimizing the amount of material consumed as well as the thickness of the composite handle H (best shown in FIGS. 2-7) that is formed from the handle panels 150, 154 and the reinforcing panels 170, 171. Reinforcing panel 170 is hingedly connected to reinforcing panel 171 along fold line 175, a portion of which may be proximate to or include an aperture 174 that facilitates folding and reduces the thickness and congestion of material along the fold. The inner edges of each of the handle panels 150, 154 and the reinforcing panels 170, 171 border aperture 168, and along with fold lines 164 and 166, form an outer edge of the handle H of the erected carrier 200.

As mentioned above, the handle section 132 is optionally hingedly connected to the partition section 133. More specifically, reinforcing panel 170 is hingedly connected to partition wall panel 180 along line 173, a portion of which may border or be defined by aperture 172. Similarly, reinforcing panel 171 is hingedly connected to partition wall panel 182 along line 178. Lines 173 and 178, which border respective pairs of panels 170 and 180 and panels 171 and 182, are not necessarily fold lines, but preferably merely demarcate the transition between reinforcing panels 170, 171 and partition wall panels 180 and 182. The width of partition wall panel 182, being the distance from fold line 192 to the opposite edge of partition wall panel 182, may approximate the height of carrier 200, which preferably remains equal or lesser than the height of intended articles to be carried.

Partition wall panels 180, 182 include respective partition flaps 194, 196. Partition flap 194 is partially detachable from partition wall panel 180, being hingedly connected along fold line 184 and detachable along severance line 198. Partition flap 194 also includes partition tab 191, which is partially detachable from partition wall panel 180 via severance line 188 and is also hingedly attached along fold lines 187a and 187b. Partition flap 196 is partially detachable from partition wall panel 182, being hingedly connected along fold line 186 and detachable along severance line 199a and 199b. Partition flap 196 also includes partition tab 193, which is partially detachable from partition wall panel 182 via severance line 195 and is also hingedly attached along fold lines 189a and 189b.

Erecting the basket-style carrier 200 from the blank 100 may be accomplished with the folding operations as described herein, the operations being performed by automatic erecting machinery and/or manually. The method of performing the erecting process is not limited to the exemplary method described herein, particularly in that the order of the steps can be altered according to the particular manufacturing requirements, steps may be added or omitted, and the means for securing components to one another may vary.

Referring particularly to FIGS. 1 and 2, the inside surfaces of handle panel 150 and reinforcing panel 170 are folded toward one another along fold line 164 into a face contacting arrangement, and the surfaces of sheet material may be secured together by suitable means for securing, such suitable securing means including tape, staples, interlocking folds, VELCRO®, glue or other adhesives, and the like. Substantially concurrently, the inside surfaces of handle panel 154 and reinforcing panel 171 are folded toward one another along fold line 166 into a face contacting arrangement, and connected with means for securing. Folding the handle panel 150 into a face contacting arrangement with reinforcing panel 170 places the inside surface of a portion of partition panel 180 in a face contacting arrangement with the inside surface of end wall panel 146, and places partition flap 194 in a face contacting arrangement with side panel 132. Similarly, folding handle panel 154 into a face contacting arrangement with reinforcing panel 171 places the inside surface of a portion of partition panel 182 in a face contacting arrangement with the inside surface of end wall panel 152, and places partition flap 196 in a face contacting arrangement with side panel 138. Handle apertures 156 and 160 and apertures 172 and 176 all align to form a single handle aperture O (best shown in FIGS. 3 and 4). Handle flaps 158 and 162 align so that each can be folded toward one another in an overlapping fashion or to the side or another along fold lines 159 and 163, respectively, and placed through the handle opening when in use. Handle flaps 158 and 162 function to provide a smooth grip area for the user’s hand and fingers by covering the raw edges of the aperture O in the handle H.

End wall panel 114 is folded toward side panel 132 along fold line 120 such that at least a portion of the inside surfaces of the panels 114, 132 are face to face, and at least a portion of end edge flap 102 may also overlap a portion of the outside surface of partition panel 180. Substantially concurrently, end wall panel 118 is folded along fold line 122 toward side panel 138 such that at least a portion of the respective inside surfaces of the panels 118, 138 are face to face, and at least a portion of end edge flap 104 may overlap a portion of the outside surface of partition panel 182.

End edge flaps 102 and 104 are folded along fold line 103 so that the outside surfaces thereof are face to face and retention tabs 107 and 108 are aligned with one another. The outside surfaces of the end edge flaps 102, 104 and retention tabs 107, 108 are secured together by means for securing, thereby creating a composite partition flap 102/104 (obstructed in FIG. 2) that protrudes inwardly from composite end wall 202 (best shown in FIG. 2) and, optionally, a composite retention tab 107/108. As mentioned above, optional aperture 110 may be included along fold line 103 to increase the flexibility and decrease the congestion of this fold. Substantially concurrently, the outside surfaces of reinforcing panels 170, 171 are folded toward one another along fold line 175 and secured, as the inside surfaces of handle panels 150, 154 are folded toward one another along fold line 153, with reinforcing panels 170, 171 disposed between handle panels 150, 154. All surfaces of handle panels 150, 154 and reinforcing panels 170, 171 are adjacent and positioned in a face contacting arrangement with respect to one another and are preferably secured to one another so as to form a relatively strong and relatively rigid composite handle H, which is best shown in FIGS. 2-7. Some material may be removed creating aperture 174, which reduces the thickness and congestion of the fold between the handle panels 150, 154 and reinforcing panels 170, 171.
With the exception of the respective partition flaps 194, 196 and partition tabs 191, 193, the outside surface of partition panel 180 is preferably secured to the outside surface of partition panel 182, thereby creating a composite partition P (best shown in FIGS. 2 and 4). An uppermost portion adjacent to composite retention tab 107/108 and a lowermost portion adjacent to fold line 103 of composite partition flap 102/104 are preferably interposed between or otherwise secured to respective uppermost and lowermost portions of the panels comprising the composite partition P.

To square up the carrier portion 211, panels 114, 118 are rotated outwardly along fold lines 112, 116, 120, and 122, respectively, to approximately 90 degrees, thereby creating composite end wall 202 composed of end wall panel 114 and 118. Panels 134, 144, 146, 152 are likewise rotated outwardly along fold lines 148 and 151, respectively to approximately 90 degrees, thereby creating composite end wall 204 (best shown in FIG. 2) composed of end wall panel 146 and 152. Composite end walls 202 and 204 oppose one another and are perpendicular to resultant side walls 232 and 238. Thus, the perimeter of the carrier 200 is defined by composite end wall 202, which is hingedly connected to side wall 232, which is hingedly connected to composite end wall 204, which is hingedly connected to side wall 238, which is also hingedly connected to composite end wall 202.

Partition tab 191 is folded 90 degrees along fold line 187a and 187b to be perpendicular to partition flap 194, which is folded 90 degrees to be perpendicular to the plane of composite partition P. In this manner, partition tab 191 is positioned parallel to side wall 232. The inside or outside surface of partition tab 191 is secured to the inside surface of side wall 232 so as to fix the perpendicular alignment of partition flap 194 with respect to side wall 232 and composite partition P. Similarly, partition tab 193 is folded 90 degrees along fold line 189a and 189b to be perpendicular to partition flap 196, which is folded 90 degrees to be perpendicular to the plane of composite partition P. In this manner, partition tab 193 is positioned parallel to side wall 238. The inside or outside surface of partition tab 193 is secured to the inside surface of side wall 238 so as to fix the perpendicular alignment of partition flap 196 with respect to side wall 238 and composite partition P.

Side edge flap 142 is folded inwardly along fold line 140 to approximately 90 degrees, and bottom panels 124, 128 are folded inwardly together along fold line 130 so that a portion of the inside surface of bottom panel 124 contacts and is secured to the outside surface of side edge flap 142. Bottom panels 124 and 128 thereby form bottom wall 124/128. By mattingly engaging clips 107, 108 with notch 127 between bottom panels 124 and 128, the walls comprising the perimeter of carrier 200 are secured in a squared arrangement, i.e., with opposing end walls 202, 204 substantially parallel to one another and substantially perpendicular to opposing side walls 232, 238, which are substantially parallel to one another as well. Retention tabs 107, 108 may or may not be secured to one another, and preferably fold flat against bottom wall 124/128 while engaged with notch 127 so as to enable the bottom wall 124/128 of carrier 200 to rest on a flat surface.

By means of composite partition P and of partition flaps 194 and 196, the carrier 200 is effectively quartered to enclose four articles in a two by two (2x2) arrangement. Those skilled in the art will readily recognize that other arrangements of various numbers of articles can be achieved, such as by positioning two partition flaps on each partition panel 180, 182 yielding a 2x3 arrangement enclosing six articles. As shown in FIGS. 3 and 5-7, the articles enclosed by the carrier 200 are at least as tall as the tallest of the carrier walls 202, 204, 232, 238, or partition P.

As described above, FIG. 4 demonstrates that optional fold line 126 can be utilized after carrier 200 is assembled, to enable basket carrier 200 to be collapsed into a flattened arrangement such as for shipping. To collapse carrier 200 after it has been at least partially erected, the retention tabs 107, 108 (not visible) are disengaged from notch 127, thereby allowing the carrier 200 to spring back into a collapsed condition. The following panels are folded onto one another in no particular order: the inside surfaces of bottom panels 124 and 128 are collapsed together along fold lines 126, 130, and 140; the outside surface of end wall panel 114 is collapsed along fold lines 112 and 120 onto the outside surface of end wall panel 118, which is collapsed along fold line 116 and 122; side wall 232 is collapsed onto end wall panel 114 and partition panel P along fold line 134; side wall 238 is collapsed onto end wall panel 118 and partition panel P along fold line 144; partition flaps 194 and 196 are collapsed onto opposite sides of partition panel P by unfolding fold lines 184 and 186; and end wall panels 146, 152 are collapsed onto opposite sides of partition panel P by unfolding respective fold lines 148, 151.

Referring now to FIG. 3, the orientation of the handle aperture O is optimized to improve the ergonomics of the carrier 200 such that the carrier 200 can be carried at one’s side without the articles, shown as cans C, falling out. FIG. 3 is a side elevation view of the erected carrier 200 having been loaded with cans C. An imaginary line representing the tubular axis X extends through the center of the tubular structure of the carrier 200 so as to be equidistant from opposing end walls 202, 204 and equidistant from opposing side walls 232, 238. A second imaginary line represents the axis of elongation Y of the elongate handle aperture O, and coincides with the weight bearing edge of elongate handle aperture O, the weight bearing edge being defined by fold lines 159/163, which are substantially aligned with one another. As previously related, handle flaps 158/162 (not shown) cushion the weight bearing edge for the comfort of the user. Tubular axis X and axis of elongation Y intersect, with the resultant angle A between the two being acute, and calculated to minimize the risk that articles will fall out of the carrier 200 when carried at the user’s side.

When the carrier 200 is carried at the user’s side with the user’s arm hanging substantially straight down toward the floor (as shown in FIG. 6), the axis of elongation Y is near horizontal with respect to the floor. At this position, angle A is calculated as at least the minimum deflection required to position the top of each article (can C) at a substantially higher elevation than the bottom of the article. Thereby, the article is unlikely to fall out of the carrier 200. Angle A is thus greater than zero, and is preferably not substantially greater than 90 degrees. Angle A may be more acute when the coefficient of friction between the surface of an article and the inside surface of the carrier 200 is greater or when each article is tightly fitted into the carrier 200. Angle A may be less acute when the coefficient of friction is
lower, that is, when each article has a tendency to slide with respect to the inside surface of the carrier, or when each article is loosely fitted into the carrier 200. In the exemplary embodiment as best shown in FIGS. 3 and 6, the angle $A$ between the handle aperture and the axis $X$ is approximately 30 degrees, and preferably ranges from 20 degrees to 45 degrees. Determination of the optimal value for angle $A$ may further take into account the extent to which a typical person swings his or her arm backwards when carrying a loaded carriage at his or her side and walking, the goal being to prevent the articles from being upended at any point in an imaginary arc representing the typical arm swing. In certain embodiments, the elongate handle aperture $O$ is disposed at an angle $A$ or otherwise designed such that the user does not have to exert or provide a moment of force on the handle $H$ to carry the carrier 200. Rather, the user need only provide a lifting force to offset the weight of the loaded carrier 200.

[0048] Referring to FIG. 8, the advantageous disposition of the elongate handle aperture is also manifest in the blank 100. The respective longitudinal axes $Z$ and $Z'$ of each transverse section A1, A2 are shown in the figure, the longitudinal axes $Z$, $Z'$ extending horizontally across the blank 100. Elongate handle aperture 156 defines an axis of elongation $Y$ that is inclined at an acute angle $B$ with respect to longitudinal axis $Z$ that is disposed along the upper longitudinal edge of the blank 100. Elongate handle aperture 160 defines an axis of elongation $Y'$ that is inclined at an acute angle $B'$ with respect to longitudinal axis $Z'$ disposed along a lower respective outer longitudinal edge of the blank 100. The angles $B$ and $B'$ are preferably equal or are otherwise related to place the handle aperture 156 and 160 in registry with one another in forming composite handle $H$ having handle aperture $O$ disposed therethrough. The apertures 172 and 176 may assume any configuration or orientation that does not interfere with the perimeter of aperture $O$. In the exemplary embodiment, the angle $B$, $B'$ between the longitudinal axis $Z$, $Z'$ and the axis of elongation $Y$, $Y'$ is 60 degrees, and preferably ranges from about 45 to 70 degrees.

[0049] In use, the fully erected and loaded carrier 200 is typically stored on a substantially flat surface, such as a shelf (not shown), or is stored in a vertically oriented stack with at least one other carrier 200 placed atop or below the first carrier. As apparent in FIGS. 3 and 5-7, the exemplary carrier 200 has no wall or partition that extends above the maximum height defined by the upper edge of the cans $C$ or other articles enclosed by the carrier. In such embodiments, the carrier 200 is best suited to enclose articles having uniform height, and preferably each article has at least a small flat top surface. Suitable articles include, but are not limited to, cans, tins, bottles, jugs, boxes, and the like. In alternative embodiments, at least two of the walls and partitions are taller than the articles enclosed so as to provide a support structure upon which another carrier 200 can rest. For example, it is contemplated that end wall 202 can be formed from end wall panels 114 and 118 that are substantially rectangular, and end wall 204 can be formed from end wall panels 146 and 152 that are substantially rectangular. These alternative end walls 202 and 204 can have the same height as the partition panel $P$, which can be made taller than the intended articles. Thus, a second carrier can be supported and stabilized by the cooperating end walls 202, 204 and partition $P$. This alternative embodiment (not shown) of carrier 200 preserves stackability, and is suited to enclose articles having varying heights, or articles having a uniform height that is less than the height of the end walls and partition.

[0050] When stacked, the composite handle $H$ preferably extends toward the user for ease of reach. Alternatively, the composite handle $H$ may be stowed, that is, folded and/or removably secured against either end wall panel 146, 152 comprising end wall 204. The user grasps the uppermost carrier 200 by its composite handle $H$, as shown in FIG. 5, and carries the carrier 200 as desired, including holding the carrier 200 at the user’s side as shown in FIGS. 6 and 7, benefiting from the advantage of the angled handle $H$, which prevents articles from falling out. This advantage is realized because in the downward position, the articles are at least somewhat upright, having upper portions at higher elevations than lower portions.

[0051] The present invention has been illustrated in relation to particular embodiments which are intended in all respects to be illustrative rather than restrictive. Those skilled in the art will recognize that the present invention is capable of many modifications and variations without departing from the scope of the invention. For example, as used herein, directional references such as “top”, “bottom”, “end”, “side”, “inside”, “outside”, “upper”, “median”, “lower”, “vertical”, and “horizontal” do not limit the respective walls of the carton to such orientation, but merely serve to distinguish these walls from one another. Any reference to hinged connection should not be construed as necessarily referring to a junction including a single hinge only; indeed, it is envisaged that hinged connection can be formed from one or more potentially disparate means for hingedly connecting materials.

[0052] Those skilled in the art will also appreciate that the basket-style carrier described represents only one example of the various carrier types and configurations that will be suitable for implementation of the various embodiments of the invention. For example, although the upper edges of the end walls, side walls, and partition wall are shown as being substantially straight edges, these upper edges may have any suitable or creative shape, providing that the highest point along such upper edge has a height less than or equal to the height of the intended articles. Accordingly, the scope of the present invention is described by the claims appended hereto and supported by the foregoing.

What is claimed is:

1. An ergonomic basket-style article carrier, comprising:
   - a tubular structure comprising a plurality of walls, the tubular structure defining a tubular axis;
   - a bottom wall hingedly connected to the tubular structure so as to enclose the lower end of the tubular structure; and
   - a handle panel hingedly connected to the tubular structure and extending outwardly therefrom, the handle panel comprising an elongate handle aperture having an axis of elongation, the axis of elongation being angled toward an upper open end of the tubular structure so as to be disposed at an acute angle with respect to the tubular axis.
2. The article carrier of claim 1, the plurality of walls comprising:
   a first end wall;
   a first side wall hingedly connected to one side of the first end wall;
   a second side wall hingedly connected to an opposite side of the first end wall;
   a second end wall hingedly connected to the first side wall and to the second side wall;
   wherein the bottom wall is hingedly connected to the first and second side walls.
3. The article carrier of claim 2, the second end wall comprising a first end wall panel and a second end wall panel hingedly connected to one another, wherein the handle panel is hingedly connected to the first end wall panel and to the second end wall panel so as to be connected to the second end wall.
4. The article carrier of claim 1, the axis of elongation of the handle aperture being defined by a weight bearing edge of the handle aperture.
5. A blank for forming a basket-style carrier for receiving a plurality of articles, the blank comprising:
   an upper transverse section having a first longitudinal axis along its upper edge, the upper transverse section having formed therein a plurality of panels hingedly connected one to another along the first longitudinal axis, the plurality of panels including an upper handle panel, the upper handle panel comprising an elongate handle aperture with an axis of elongation disposed at an acute angle with respect to the first longitudinal axis.
6. The carrier blank of claim 5, the plurality of panels comprising:
   a first upper end wall panel;
   an upper side panel; and
   a second upper end wall panel;
   wherein the upper side panel is hingedly connected to the first upper end wall panel, the second upper end wall panel is hingedly connected to the upper side panel, and the upper handle panel is hingedly connected to the second upper end wall panel.
7. The carrier blank of claim 5, further comprising:
   a lower transverse section disposed alongside and hingedly connected to the upper transverse section, the lower transverse section having a second longitudinal axis along its lower edge, the lower transverse section having formed therein a plurality of panels hingedly connected one to another along the second longitudinal axis, the plurality of panels including a lower handle panel, the lower handle panel comprising an elongate handle aperture with an axis of elongation disposed at an acute angle with respect to the second longitudinal axis.
8. The carrier blank of claim 7, the plurality of panels comprising:
   a first lower end wall panel;
   a lower side panel; and
   a second lower end wall panel;
   wherein the lower side panel is hingedly connected to the first lower end wall panel, the second lower end wall is hingedly connected to the second lower end wall panel.
9. The carrier blank of claim 7, wherein the upper and lower handle panels are hingedly connected to respective upper and lower reinforcing panels for, when the blank is erected into a finished carrier, forming a composite handle structure by which said carrier is lifted.
10. The carrier blank of claim 9, wherein the upper and lower reinforcing panels are hingedly connected to respective upper and lower partition wall panels for, when the blank is erected into a finished carrier, forming a composite partition panel for subdividing the interior of the carrier.
11. The carrier blank of claim 10, wherein the upper and lower partition wall panels comprise partially detachable partition flaps for, when the blank is erected into a finished carrier, forming additional partitions substantially perpendicular to the composite partition panel for further subdividing the interior of the carrier.
12. A package, comprising:
   a plurality of articles of substantially uniform height; and
   a stackable basket-style article carrier for enclosing the articles, comprising:
   a first end wall;
   a first side wall hingedly connected to one side of the first end wall;
   a second side wall hingedly connected to an opposite side of the first end wall;
   a second end wall hingedly connected to the first side wall and to the second side wall, and the second end wall comprising a first end wall panel and a second end wall panel hingedly connected to one another;
   a bottom wall hingedly connected to at least two of the first and second end walls and the first and second side walls so as to enclose one end of the article carrier;
   a partition panel extending across from the first end wall to the second end wall; and
   a handle panel hingedly connected to the first end wall panel and the second end wall panel so as to be connected to the second end wall, the handle panel being extendable outwardly with respect to the second end wall;
   wherein the maximum height of any one of the end walls, the side walls, and the partition panel is no greater than the height of the plurality of articles.
13. The package of claim 12, wherein the handle panel has an uppermost edge that extends no higher with respect to the bottom wall than the height of the plurality of articles.
14. The package of claim 12, wherein:
   the article carrier defines a tubular axis; and
   the handle panel comprises an elongate handle aperture having an axis of elongation, the axis of elongation being angled toward the open end of the article carrier so as to be disposed at an acute angle with respect to the tubular axis.
15. A package, comprising:
   a plurality of articles of substantially uniform height; and
   a stackable basket-style article carrier for enclosing the articles, comprising:
      a tubular structure comprising a plurality of walls;
      a bottom wall hingedly connected to the tubular structure so as to enclose the lower end of the tubular structure; and
      a handle panel hingedly connected to the tubular structure and extending outwardly therefrom;
   wherein the maximum height of any one of the plurality of walls is no greater than the height of the articles.
16. The package of claim 15, wherein the handle panel has an uppermost edge that extends no higher with respect to the bottom wall than the height of the plurality of articles.
17. The package of claim 15, wherein:
   the tubular structure defines a tubular axis; and
   the handle panel comprises an elongate handle aperture having an axis of elongation, the axis of elongation being angled toward the upper open end of the tubular structure so as to be disposed at an acute angle with respect to the tubular axis.
18. A package, comprising:
   a plurality of articles; and
   a stackable basket-style article carrier for enclosing the articles, comprising:
      a first end wall;
      a first side wall hingedly connected to one side of the first end wall;
      a second side wall hingedly connected to an opposite side of the first end wall;
      a second end wall hingedly connected to the first side wall and to the second side wall, and the second end wall comprising a first end wall panel and a second end wall panel hingedly connected to one another;
      a bottom wall hingedly connected to at least two of the first and second end walls and the first and second side walls so as to enclose one end of the article carrier;
      a partition panel extending across from the first end wall to the second end wall; and
   a handle panel hingedly connected to the first end wall panel and the second end wall panel so as to be connected to the second end wall, the handle panel being extendable outwardly with respect to the second end wall;
   wherein any two of the end walls, the side walls, and the partition panel have the same maximum height, which is at least the height of the plurality of articles, and form a weight bearing structure.
19. The package of claim 18, wherein the handle panel has an uppermost edge that extends no higher with respect to the bottom wall than the height of the weight bearing structure.
20. The package of claim 18, wherein:
   the article carrier defines a tubular axis; and
   the handle panel comprises an elongate handle aperture having an axis of elongation, the axis of elongation being angled toward the upper open end of the article carrier so as to be disposed at an acute angle with respect to the tubular axis.
21. A package, comprising:
   a plurality of articles of substantially uniform height; and
   a stackable basket-style article carrier for enclosing the articles, comprising:
      a tubular structure comprising a plurality of walls;
      a bottom wall hingedly connected to the tubular structure so as to enclose the lower end of the tubular structure; and
      a handle panel hingedly connected to the tubular structure and extending outwardly therefrom;
   wherein any two of the end walls, the side walls, and the partition panel have the same maximum height, which is at least the height of the plurality of articles, and form a weight bearing structure.
22. The package of claim 21, wherein the handle panel has an uppermost edge that extends no higher with respect to the bottom wall than the height of the weight bearing structure.
23. The package of claim 21, wherein:
   the tubular structure defines a tubular axis; and
   the handle panel comprises an elongate handle aperture having an axis of elongation, the axis of elongation being angled toward the upper end of the tubular structure so as to be disposed at an acute angle with respect to the tubular axis.