

Improvements in or relating to a carrier

THE PRESENT INVENTION relates to a carrier. More particularly the invention relates to a carrier for objects such as food containers or the like, which can be selectively engaged by the carrier and subsequently released therefrom.

5

Carriers of this general type are known, for examples see U.S. Design Patent No. D.254,170; and U.S. Patent Specification No. 4,207,997.

10

Of particular note with regard to U.S. 4,207,997 is the extensive discussion therein relative to the advantages of and limitations in detachable carriers.

15

One particular advantage of such carriers is the elimination of the need for individual containers to have individual handles. Rather, a single carrier may be used to sequentially accommodate any number of containers. This in turn provides for more compact containers which facilitates container storage and results in substantial savings in materials and manufacturing procedures.

20

However, such carriers are generally subject to limitations including difficulties in achieving proper engagement between the carrier and a container to provide for positive support of the container while allowing substantially free access to the container, and in particular to the loading end thereof.

25

Another area of potential difficulty lies in the handle itself, particularly with regard to carriers wherein the handle is formed of multiple elements which, during use, are manually retained or mechanically interlocked into a single handle or hand grip.

30

(15)

-2-

An object of the invention is to provide an improved carrier of the type adapted to engage with a container or the like for convenient manual transport or handling of the container, and which, after use, may readily be disengaged for subsequent reuse.

5

10

15

20

Accordingly, the invention provides a carrier for use in the releasable support of a container; said carrier comprising: a container receiving frame; first flexible strap means, fixed to said frame and extending therefrom; second flexible straps means fixed to said frame and extending therefrom at a position generally opposed to said first strap means; first and second elongate handle elements respectively fixed to ends of the first and the second strap means remote from said frame, each said handle element extending transversely of the corresponding strap means; each handle element including an elongate panel, having first and second sides, and recess defining means adjacent the first side of said panel to define a recess of a size suitable to receive the panel of the other handle element whereby said handle elements are adapted for releasable cooperating engagement, the panel of each element being received within the recess of the other element.

Preferably, cooperating releasable lock means are provided on each panel and each recess defining means for releasably locking a panel within the recess receiving this panel.

25

30

35

Desirably, each handle element includes an elongate rigid body having an elongate first side with opposed edges, said panel being arranged to project generally perpendicularly from said first side in spaced relation to a first one of said edges to define a shoulder between the panel and said first edge, said body having an elongate second side extending from a second of said edges substantially perpendicular to said first side, said recess defining means comprising an elongate lip extending laterally outward of the second side of the elongate body, said lip including an outer portion generally parallel to and spaced from said second side and terminating in an outer edge generally coplanar with said shoulder to enable seated engagement of the outer edge of the handle element on the shoulder of the other handle element.

A plurality of spaced-apart pairs of ribs are preferably formed integrally with each panel, the ribs of each pair projecting from opposed sides of said panel.

5 In a preferred embodiment, said releasable lock means includes at least one detent in the panel of each said handle element between a set of adjoining ribs, and at least one projection on said recess defining means, said projection being positioned to cooperate with the detent upon reception of each panel within the recess of the other handle element.

10 Desirably, each strap means comprises a pair of spaced-apart straps extending from said frame to engage the handle element at respective opposed ends thereof. Most desirably the width of said straps varies from a maximum width adjacent said frame to a minimum width adjacent the
15 handle element. It is also preferred that each strap varies in thickness from a minimum thickness adjacent said frame to a maximum thickness adjacent the handle element.

20 A preferred embodiment of a carrier in accordance with the invention includes an endless frame adapted to receive a container therein, the carrier being sized relative to the container to either frictionally engage therewith or appropriately seat beneath a peripheral flange-like portion thereon whereby complete movement of the container through the frame is precluded. Strap means extend from opposed portions of the frame and,
25 through a degree of flexure inherent therein, are adapted to be swung upwardly and over the frame received container. The strap means, in each instance, mount an elongated rigid handle element. The handle elements, in turn, are adapted for releasable interlocking into a single handle or hand grip which is rigidified by internal ribbed panels, provided with external grip
30 enhancing grooves in conjunction with a generally smoothly contoured projection-free surface, and incorporates inter-fitting projections and detents interlocking the handle elements in a manner whereby the load introduced into the carrier during the normal use thereof will enhance the engagement.

35 The handle elements are identical, one being inverted relative to the other. Each element includes an elongated body extending between strap-

mounted end blocks. The body comprises an arcuate surface that is grooved along its length and extends for the full length of the body. The arcuate surface terminates at a longitudinally extending planar shoulder from which a vertically extending ribbed panel, equal in length to the arcuate surface, projects. A full length arcuate lip, having a degree of lateral curvature corresponding to that of the said arcuate grooved surface of the body, is integrally formed on the opposite side of the body from the arcuate surface to define a vertically directed recess for nested reception of the panel of the companion handle element. Upon nesting together of the handle elements the arcuate lip of each element directly engages the shoulder of the other element, a smooth continuation of the arcuate body wall being formed. Each panel has a series of detents formed therein which cooperate with projections provided on the lips of the companion elements to provide for snap locking of the elements together upon seated engagement of the panels within the respective recesses.

In order that the invention may be more readily understood, and so that further features thereof may be appreciated, an embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of a carrier in accordance with the present invention with the handle elements interlocked;

FIGURE 2 is a side elevational view of the carrier of Figure 1;

FIGURE 3 is an end elevational view of the carrier of Figure 1;

FIGURE 4 is a plan view of the carrier of Figure 1, with the handle elements released and the handle mounting straps unstressed;

FIGURE 5 is a side elevational view of the carrier of Figure 4;

FIGURE 6 is an end view of the carrier of Figure 4;

FIGURE 7 is a side elevational view of the carrier of Figure 1, illustrated just prior to engagement of the handle elements;

FIGURE 8 is a perspective detail of two handle elements spaced slightly from each other;

5 FIGURE 9 is an enlarged cross-sectional detail through the engaged handles, taken along line 8-8 in Figure 2;

FIGURE 10 is a further perspective detail of the handle elements;

10 FIGURE 11 is a perspective detail of one corner of the frame of the carrier of Figure 1; and

FIGURE 12 is a perspective detail of the carrier of Figure 1 in use.

15 Referring to the drawings, a carrier of the invention is generally designated at 20. The carrier 20, as will be appreciated from Figures 7 and 12 in particular, is specifically intended for detachable engagement with a container 22 for lifting and carrying thereof. The illustrated container 22 is of generally rectangular configuration and may have vertical or somewhat upwardly and outwardly divergent side walls 24, an open top surrounded by a peripheral flange 26, and, if so desired, a closure or lid 28.

20 The carrier 20 includes an endless rectangular frame 30 defined, preferably, by a continuous cylindrical rod-shaped member incorporating inwardly enlarged inner corner portions 32 to provide additional rigidity at the corners of the frame and to provide vertical container-guiding faces. As
25 will be appreciated, the frame 30 is shaped to compliment the walls of the container 22 to be received therein. While the frame 20, in use of the carrier, will normally engage the undersurface of the container flange 26, if the walls of the container are tapered the frame may engage the container walls themselves to both confine and support the container 22. Similarly, it
30 will be appreciated that while the carrier 20 has been illustrated with a rectangular container receiving frame 30, the frame may have any desired shape, this shape being dictated by the shape of the particular containers to be engaged therein.

35 A first pair of laterally spaced straps 34 are integrally formed along and project from a central portion of one side of the frame 30. A similar

pair of laterally spaced straps 36, that are aligned with the first pair of straps 34, are integrally formed with and project from the opposed side of the frame 30. The straps 34 and 36 are flexible or flexibly resilient and are adapted for flexing between a completely opened position of the carrier, illustrated in Figures 4 to 6, wherein the straps are substantially coplanar with the frame 30, and a carrying position wherein the straps are folded upward and over an upper portion of the frame 30 as illustrated in Figures 1 and 12. As will be described further hereinbelow, a pair of handle elements 42, 44 respectively connect the ends of the straps 34, 36 remote from the frame 30.

Each of the straps 34, 36 has a generally H-shaped cross-section, comprising a planar central web 38 with opposed side flanges 40 projecting both above and below the web 38. The flanges 40 significantly reinforce the web 38 and thus the straps 34, 36. As best seen in Figures 2 and 4, the straps, in plan view, taper from a maximum width, at the point of joinder to the frame 30, to a minimum width remote therefrom. Conversely, as best seen in the side elevational views of Figures 3 and 5, each strap, and more particularly the side flanges 40 thereof, taper from a minimum height adjacent the frame 30 to a maximum height at the narrower remote end of the strap. This configuration has been found to enhance the ability of the straps to flex, particularly in the immediate vicinity of the frame 30, while the strength of the straps is assured by both the relatively greater width adjacent the point of major flexure, and the relatively greater thickness toward the remote ends of the straps at which the actual lifting force is applied.

Actual manual engagement with the carrier is effected through the pair of complimentary handle elements 42 and 44. The handle elements 42, 44 are structurally identical, one element being inverted relative to the other to enable a snap interlocking therebetween to form a single gripping handle having a slightly rounded cross-sectional configuration.

For purposes of description, only the handle element 42, that is integrally formed with and engaged between the remote ends of the straps 34, will be described in detail. Again for the purposes of this description the handle will be assumed to oriented as shown in Figures 8 to 10, unless

26

otherwise stated. The handle element 42 includes an elongate body 46 having a planar lower surface 48 which, through an arcuate inner edge portion 50, merges into a vertical inner surface 52 which terminates at a horizontal shoulder 54. A corner edge, formed between the vertical inner surface 52 and the horizontal shoulder 54, may be notched or otherwise slightly recessed as indicated at 56 to facilitate disassembly.

Extending from the shoulder 54, along the full length thereof, and inwardly spaced from the edge 56, is a vertically oriented partition or panel 58. This panel 58 has vertical laterally projecting ribs 60 arranged in spaced pairs along the length thereof, the opposed ribs 60 of each pair extending from opposed vertical faces of the panel 58. The ribs 60 have vertical outer faces and arcuate upper ends which, as will be appreciated from the cross-sectional view of Figure 9, are configured to combine with the upper edge of the panel 58, which is slightly radiussed, to form a continuous, rounded, cross-sectional configuration. The ribs 60 on the outer face of the panel 58, that is the face remote from the shoulder 54, have vertical outer faces that are coplanar with an outer wall face 62 of the body 46 that extends immediately therebelow.

A lip 64, that extends for the full length of the body 45, projects outwardly, and arcuately curves upwardly, from the outer vertical wall face 62 of the body 46, adjacent the lower end thereof, and terminates at an upper edge 66. The upper edge 66 is positioned to be substantially coplanar with the shoulder 54, but is spaced outwardly from the wall face 62 to define a full length recess which, in size and configuration, compliments the ribbed panel 58, and so can receive an oppositely oriented similar handle element as will be best appreciated from the view of the cooperating elements 42 and 44 shown in Figure 9. The outer surface of the lip 64 is defined by an arcuate lower edge 68, that extends from the lower surface 48 in a direction opposite to the edge portion 54 and a vertical surface 70, and has a contour substantially identical to that defined by the body surfaces 48, 50 and 52. The thickness of the lip 64 is equal to the depth of the shoulder 54. Further, the elongate corner juncture between the upper edge 66 of the lip 64 and the vertical surface 70 can be bevelled or recessed, as indicated at 72, in similar fashion to the corner recess 56 of the shoulder 54.

Cooperation between the recesses 56, 72 defines means to assist in disengaging cooperating handle elements.

5 Grip enhancing grooves 74 are provided at equally spaced points along the length of the body 46. The grooves 74 are vertically defined within the edge portion 50 and inner surface 52 of the body 46.

10 This configuration enables the elements 42 and 44, to be assembled by positioning the respective panel 58 of each element within the complementary elongate recess of the other element. In this manner engagement of the lips 64 with the shoulders 54, as will be best appreciated in Figures 9 and 10, defines an elongate rod-like handle. This handle, in cross-section, is generally rectangular with rounded edge or corner portions, an opposed pair of which have grip enhancing grooves defined therein.

15 In order to provide for a positive, yet releasable, engagement between the elements 42 and 44, the inner face of each of the panels 58, i.e. that face projecting vertically from the shoulder 54, includes, a number of transverse detents 76 at points therealong between adjacent vertical ribs 60. Each detent 76 is positioned slightly below mid-height on the panel 58 and is defined by a transverse depression with an immediately overlying smoothly contoured bulge or protrusion. The inner surface of the lip 64 is formed with an equal number of vertical bars or ribs 78, having inner edges or surfaces configured to define detent mating projections 80. The projections 20 80 are so positioned that, when two handle elements cooperate to form a single handle, respective projections 80 align with the detents 76, the depth of the bars 78 corresponding to that of the ribs 60, so that the handle elements 42 and 44 are secured by positive interlocking of the projections 80 and detents 76 of the respective elements. The engagement of the bars 78 25 between adjacent ribs 60 also assists in restricting any longitudinal shifting of the cooperating handle elements relative to each other.

30 As best shown in Figure 8, the straps 34 associated with the handle element 42 engage, and are preferably integrally formed with, block-like structures 82 defined at the respective ends of the handle element 42. Each block-like structure 82 includes a lower contoured surface 84 which has a 35 contour similar to the contour of the surfaces 50 and 52 of the body 46 and,

effectively, constitutes an extension thereof. The upper portion of each structure 82 includes a pair of arcuate flanges 86 which are laterally spaced apart at a distance corresponding to the spacing between the side flanges 40. A planar outer wall 88 of each block-like structure 82 constitutes an end wall of the handle element 42. The arcuate flanges 86 have a contour similar to that of the lip 64 of the second handle element which is received immediately adjacent thereto. When the handle elements 42 and 44 are assembled, the flanges 86 form a substantially continuous construction, each lip 64 being nested between the end structures 82 of the opposite handle element. Each of the end structures 82 has a planar vertical face 90 which constitutes a continuation of the outer wall face 62 of the adjoining panel 58 and is co-planar with the outer face of the ribs 60 vertically aligned therewith.

While the above description has been primarily directed to handle element 42, it is to be appreciated that handle element 44 is an exact inverted duplicate thereof. Accordingly, the same reference numerals have been used to indicate like parts of handle element 44, in the drawings.

The carrier 20 is preferably integrally moulded from an inherently resiliently flexible and yieldable plastics material, for example from a suitable polymer or co-polymer. It will be appreciated that various suitable materials will readily occur to those skilled in the fabrication of plastics articles.

Although formed from a flexible material, the handle elements 42, 44, and therefore the handle formed by cooperation of the elements, are required to incorporate a substantial degree of rigidity. This rigidity is achieved by constructing the handle elements to include the central ribbed partition, substantially thickened body, and coextensive spaced lip portion. The straps 34 and 36 are similarly selectively rigidified by the varying of the thickness of the side flanges 40 and by varying the width of the side flanges 40 and the width of the straps along their length, whereby substantial rigidity is retained adjacent the strap interconnecting handle elements while a high degree of flexure is retained adjacent the container receiving frame 30 at which point the straps are of maximum width with the strap flanges of minimum height.

As illustrated in Figures 4, 5 and 6, the carrier 20, in its unstressed position, is substantially planar, the straps extending laterally from opposed sides of the frame 30 and the handle elements being substantially inverted from their final cooperating position (shown in Figures 12). Engagement of the carrier 20 with a container 22 is normally effected by introducing the container 22 downwardly through the unstressed frame 30. The frame 30 is then elevated until it intimately engages either the tapered side walls 24 of the container or an appropriate container flange 26.

With the frame thus engaged access to the interior of the container is still readily possible. Similarly, a container closure 28 may readily be removed and replaced with the straps in their unstressed position.

When the container is to be carried, the outwardly directed straps are swung upwardly and inwardly, the straps generally arcuately flexing, to move the handle elements to a substantially central position over the container, at which point the handle elements are interlocked. Interlocking is effected, in a manner obvious from the drawings, through respective engagement of the ribbed panels of each element within the complimentary recess of the other element, the lip of each element being moved into abutting engagement with the shoulder of the other element. This movement effects the desired interengagement of the lip mounted projections 80 with the panel formed detents 76.

Once interlocked, the handle elements 42 and 44 define an elongate rigid handle or hand grip through which the carrier and container received therein can be readily carried.

The interesting relationship between the cooperating handle elements, and the inherent enhancement of the detent and projection interengagement as the handle is gripped and elevated, provides for a positive interconnection of the handle elements, precluding any possibility of accidental disengagement. To release the handle elements, either for access to the interior of the container or for removal of the carrier, appropriate pressure is applied along the adjoining recessed edges 56 and 72 of abutting lips and shoulders, for example using a finger and thumb. Upon disengagement of the elements, the resiliency of the straps will tend to

24

-11-

move the straps, with the handle elements thereon, outwardly into the unstressed position.



CLAIMS:

1. A carrier for use in the releasable support of a container; said carrier comprising: a container receiving frame; first flexible strap means, fixed to said frame and extending therefrom; second flexible strap means fixed to said frame and extending therefrom at a position generally opposed to said first strap means; first and second elongate handle elements respectively fixed to ends of the first and the second strap means remote from said frame, each said handle element extending transversely of the corresponding strap means; each handle element including an elongate panel, having first and second sides, and recess defining means adjacent the first side of said panel to define a recess of a size suitable to receive the panel of the other handle element whereby said handle elements are adapted for releasable cooperating engagement, the panel of each element being received within the recess of the other element.

2. A carrier according to claim 1, further comprising cooperating releasable lock means on each panel and each recess defining means for releasably locking a panel within the recess receiving this panel.

3. A carrier according to claim 1 or claim 2, wherein each handle element includes an elongate rigid body having an elongate first side with opposed edges, said panel being arranged to project generally perpendicularly from said first side in spaced relation to a first one of said edges to define a shoulder between the panel and said first edge, said body having an elongate second side extending from a second of said edges substantially perpendicular to said first side, said recess defining means comprising an elongate lip extending laterally outward of the second side of the elongate body, said lip including an outer portion generally parallel to and spaced from said second side and terminating in an outer edge generally coplanar with said shoulder to enable seated engagement of the outer edge of the handle element on the shoulder of the other handle element.

4. A carrier according to claim 1, claim 2 or claim 3, wherein a plurality of spaced-apart pairs of ribs are formed integrally with each panel, the ribs of each pair projecting from opposed sides of said panel.



26

-13-

5. A carrier according to claim 4 when dependent upon claim 2 or claim 3, wherein said releasable lock means includes at least one detent in the panel of each said handle element between a set of adjoining ribs, and at least one projection on said recess defining means, said projection being positioned to cooperate with the detent upon reception of each panel within the recess of the other handle element.
6. A carrier according to claim 5, including multiple spaced detents along each panel and multiple complementary projections along each recess defining means.
7. A carrier according to any one of claims 1 to 6, wherein said handle elements are inverted duplicates of each other.
8. A carrier according to claim 7, wherein each handle element includes bars on an outer portion of the recess defining means, said bars aligning with the detents for engagement between the ribs of each of said sets of adjoining ribs on the other handle element, said projections being formed on said bars.
9. A carrier according to anyone of claims 1 to 8, wherein each strap means comprises a pair of spaced-apart straps extending from said frame to engage a handle element at respective opposed ends thereof.
10. A carrier according to claim 9, wherein the width of said straps varies from a maximum width adjacent said frame to a minimum width adjacent the handle element.
11. A carrier according to claim 9 or claim 10, wherein each strap varies in thickness from a minimum thickness adjacent said frame to a maximum thickness adjacent the handle element.
12. A carrier according to claim 9, claim 10 or claim 11, wherein each strap has an H-shaped cross-sectional configuration comprising a transverse web with opposed inner and outer side flanges.

27



-14-

13. A carrier according to any one of claims 9 to 12, wherein the elongate panel and lip of each handle element extends between the inner side flanges of the corresponding pair of straps.
- 5 14. A carrier according to any one of claims 3 to 13, wherein the elongate body of each handle element includes third and fourth sides respectively opposed from said first and second sides, and gripping grooves are defined in said third and fourth sides at spaced points therealong.
- 10 15. A carrier according to any one of claims 1 to 14, wherein said frame comprises a polygonal container encircling member having interior container engaging corners, said corners being inwardly enlarged and including planar inner faces.
- 15 16. A carrier substantially as herein described with reference to and as shown in the accompanying drawings.
-