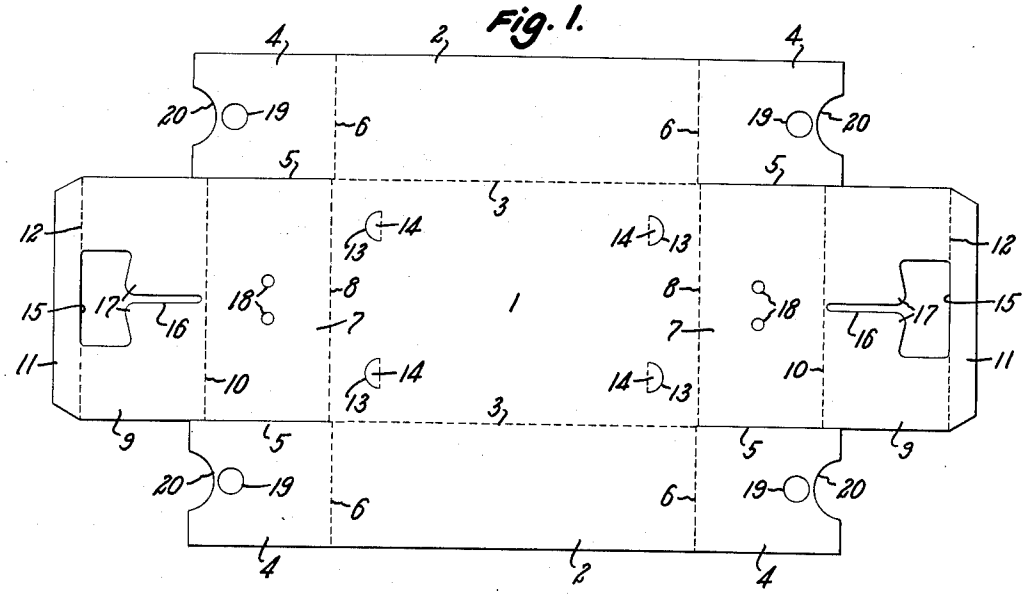
May 22, 1956 C. L. CHAMPLIN ET AL 2,746,638

CARRIER CARTONS

Filed April 10, 1953 2 Sheets-Sheet 1

Fig. 1.



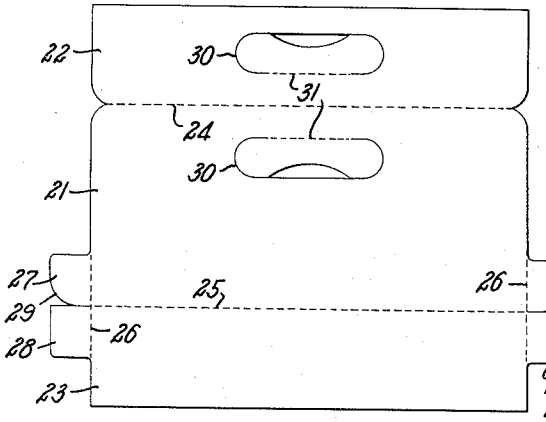


Fig. 2.

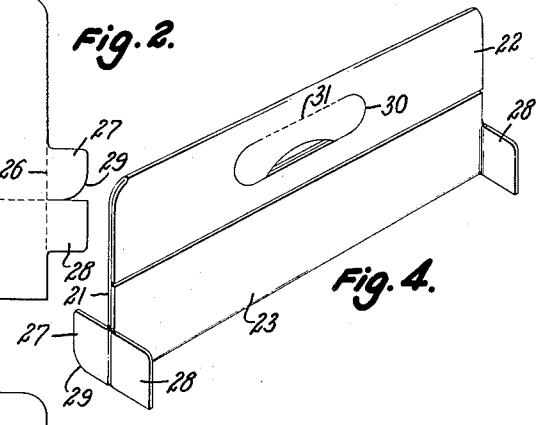


Fig. 4.

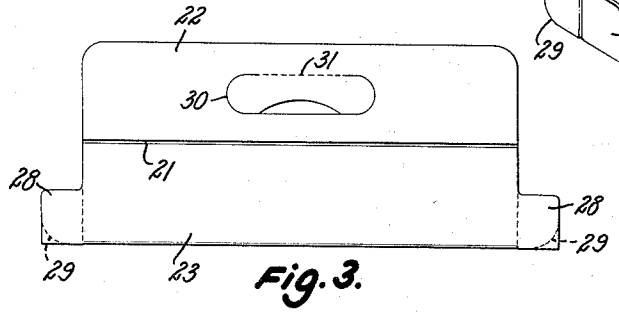


Fig. 3.

INVENTORS

Charles L. Champlin
and Jerrold H. Steele

BY W. H. Fuchs Jr.

ATTORNEY

May 22, 1956 C. L. CHAMPLIN ET AL 2,746,638

CARRIER CARTONS

Filed April 10, 1953 2 Sheets-Sheet 2

Fig. 5.

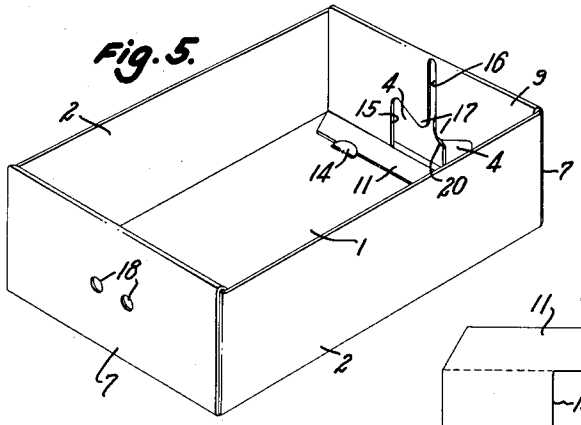


Fig. 6.

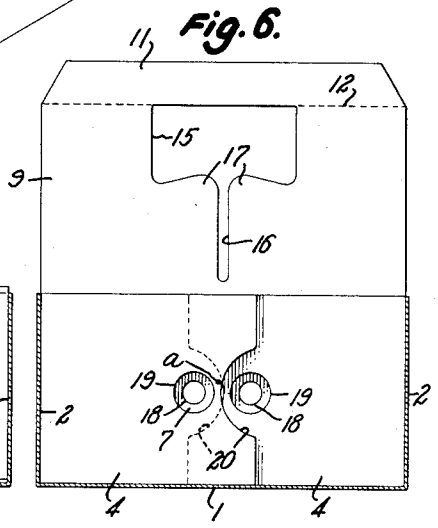


Fig. 8.

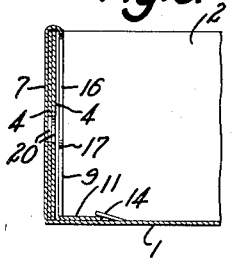


Fig. 7.

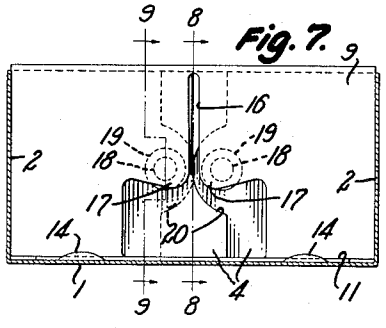


Fig. 9.

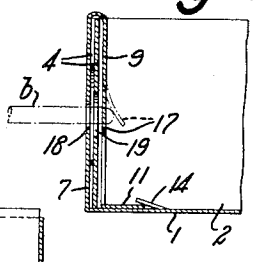


Fig. 10.

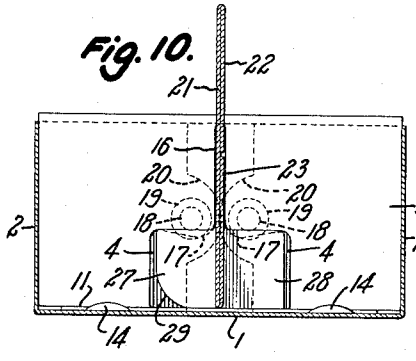
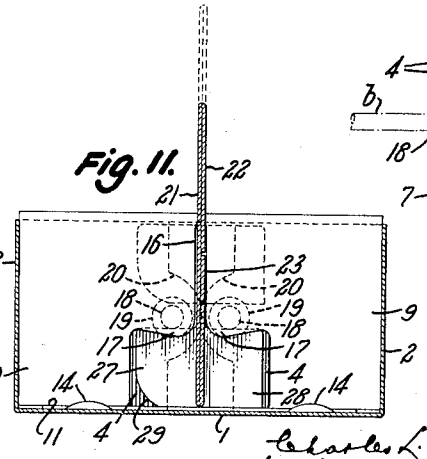


Fig. 11.



INVENTORS

Charles L. Champlin
and Gerald H. Steele

BY W. H. Finckel Jr.

ATTORNEY

United States Patent Office 2,746,638 Patented May 22, 1956

2,746,638

CARRIER CARTONS

Charles L. Champlin and Gerald H. Steele, Rittman, Ohio, assignors to The Ohio Boxboard Company, Rittman, Ohio, a corporation of Ohio

Application April 10, 1953, Serial No. 347,984

8 Claims. (Cl. 220—105)

In the provision of the so-called "six-package" of articles, such, primarily, as canned beer, it has become more or less accepted practice to assemble the six cans, on end, in two rows of three cans each, in a paperboard carton or container, and one object of the present invention is to provide a carton or container preferably of open top form and having a handle member extending longitudinally of the carton between the two rows of cans. This handle member is provided with a hand hole and is vertically shiftable with respect to the end walls of the carton and the rows of cans, whereby when it is in its lowered or depressed position its top edge will be substantially in a plane with the tops of the cans, and when it is raised will extend above the tops of the cans in such position that the hand hole will be accessible for carrying the package.

A further object of the invention is to provide a carton or container of this general type having multiple ply end walls with the inner, oppositely disposed, plies of these two walls provided with medial slots, and the handle member provided at its opposite ends with laterally offstanding wings which, when the handle member is assembled in the carton, will extend into the spaces between the inner and outer plies of the end walls, the wing members being of considerably less height than the end walls to thus permit the handle member to be raised and lowered while guided by the slots of the inner plies of the end walls, and the wing members serving to arrest any raising of the handle member by their engagement with the folds at the top edges of the end walls where the inner and outer plies of such walls are joined.

Still another object of the invention is to provide a carton structure of this type which will be strong and satisfactory in service for the reason that the ultimate association of the wing members of the handle member with the end walls is normally incapable of disengagement and is therefore wholly dependable. Moreover, the carton of the invention lends itself readily to assembly by automatic machinery, particularly when such machinery forms a part of the line packaging apparatus now widely employed in breweries.

It is to be noted, moreover, that, due to its form and arrangement in the carton, the handle member may serve also as a partition to separate the rows of cans or other articles.

With these and other objects in view, the invention, in a specific aspect, resides in providing the inner plies of the end walls or the carton or container, at points flanking the handle receiving slots, with ears which extend nearer to the carton bottom than the height of the wing members of the handle member when the latter are in the position determined by the greatest depression of the handle member within the carton, and thus lying behind such wing members when the handle member is initially lowered into the carton; and in providing, in substantially horizontal alignment with such ears apertures in the outer layers or plies of the end wall members through which probe means may be introduced to

deflect or distort the ears inwardly and cause them to snap over the upper edges of the wing members to thus cause introduction of the wing members between the inner and outer plies of the end wall members and in position to guide and stop the raising and lowering of the handle member and to guide it relatively to the slots in the inner plies of the respective end wall members; and the invention comprises other structural refinements of both the carton proper and the handle member which make possible ease in erection of said carton proper and handling and assembly therewith of the handle member by automatic machinery, all as will be explained hereinafter more fully and finally claimed.

In the accompanying drawings illustrating the invention, in the several figures of which like parts are similarly designated,

Fig. 1 is a plan view of the blank for the carton proper of the invention,

Fig. 2 is a plan view of the blank for the handle member for the carton,

Fig. 3 is a side elevation of the handle member folded and secured in condition for the operation of assembling with the carton,

Fig. 4 is a perspective view of the handle member with its wing members spread apart in final position for assembly with the carton,

Fig. 5 is a perspective view of the set up carton proper,

Fig. 6 is an enlarged sectional elevation taken on a plane medially of the side walls of the carton and looking toward an end wall prior to folding inward and downward of the inner end wall ply of the end wall member,

Fig. 7 is a view similar to Fig. 6 but with the inner end wall ply in fully assembled condition,

Fig. 8 is a fragmentary sectional elevation taken on the line 8—8 of Fig. 7,

Fig. 9 is a view similar to Fig. 8 but taken on the line 9—9 of Fig. 7 and showing in dot and dash lines the operation of the probe means,

Fig. 10 is a view similar to Fig. 7 but showing the handle member inserted in the carton proper prior to completion of its assembly with the end walls thereof, and

Fig. 11 is a view similar to Fig. 10 but showing completion of the assembly of the handle member with the carton end walls, and indicating, in broken lines, the fully raised position of this member.

Having reference particularly to Fig. 1, it will be seen that the carton proper is formed from a single integral blank of suitable paperboard material, such as ordinary carton board, having appropriate cuts and folding scores defining a bottom member 1, similar side wall members 2 foldable with respect to the bottom member upon folding scores 3 and having offstanding end flaps 4 defined by cuts 5 and folding scores 6, and end wall members each having an outer ply 7 defined from the bottom member 1 by a folding score 8, and an inner ply 9 defined from the outer ply 7 by a folding score 10 and provided at its free end with a retaining flap 11 defined from it by a folding score 12.

The bottom member 1 is provided adjacent to its end scores 8 with arcuate cuts 13 defining pairs of displaceable locking tabs 14 for engagement with the retaining flaps 11 of the inner plies of the end wall members when the carton is set up to hold the carton parts in proper locked assembly.

The inner plies 9 of the end wall members are provided with openings 15 adjacent to and adjoining the scores 12 of the retaining flaps 11 and communicating with slots 16 which, where they merge into the openings 15, are flanked by ears 17 which project into these openings, and the outer plies 7 of the end will members are provided with apertures 18 which, when the plies are in set-up,

folded condition, will be in substantial alignment with the ears **17**.

The end flaps **4** of the side wall members **2** are provided with apertures **19**, and their end edges are formed with arcuate recesses **20**, these apertures and recesses serving to provide free passages between the apertures **18** of the outer plies **7** of the end wall members and the ears **17** of the inner plies **9** thereof when the carton is assembled.

Having reference to Figs. 2 to 4, it will be seen that the handle member is formed from a blank of suitable paperboard material, preferably of a nature and caliper adequate to give it desired strength and rigidity, provided with cuts and scores defining the main panel **21** and two similar auxiliary panels **22** and **23** defined from the main panel by folding scores **24** and **25**, respectively. Offstanding from both lateral edges of the panels **21** and **23**, and defined therefrom by folding scores **26**, and of substantially equal area above and below the score **25** between these panels, are wing members **27** and **28**, respectively, and either one of the wing members of these pairs may have its lower outer corner relieved by an arcuate cut **29** for ease in separating the wing members of the pairs when folded together, as shown in Fig. 3, for a purpose hereinafter appearing.

The main panel **21** and auxiliary panel **22** are provided with cuts **30** and scores **31** defining reinforced hand holes, and these hand holes thus defined will register when the member is folded as shown in Fig. 3. When the member is thus folded the auxiliary panels **22** and **23** will be secured to the main panel **21** throughout all their area with the exception of the wing members **27** and **28**, and preferably also the reinforcing members within the hand holes defined by the cuts **30** and scores **31**.

In erecting the carton blank of Fig. 1 with its parts in proper assembled, set-up condition, automatic machinery may be employed, but whether such machinery is used or the carton is set up by hand manipulation, the following steps are performed, preferably in the order given.

Assuming that the carton is set up on automatic machinery, say of the forming die cavity and plunger type, the blanks (Fig. 1) preferably in a hopper in multiple, substantially vertical, arrangement and thus supported adjacent to the die cavity by rails with which the arcuate recesses **20** of the upper two of the longitudinally opposite end flaps **4** are engaged, are fed, as by a suction-cup feeding mechanism, one at a time, to a position over the forming die cavity and gauged in proper register therewith. Then, as the plunger descends, the side wall members **2** are brought up upon the folding scores **3** to position substantially normal to the bottom member **1**, their end flaps **4** meanwhile being progressively turned inward over the bottom member and overlapped, as shown in Fig. 6, in substantial vertical alignment with the folding scores **8** at opposite ends of the bottom member. Also, during the erection of the side wall members, and the folding of their end flaps **4**, the outer end wall plies **7** are folded upwardly upon their folding scores **8** into face-to-face engagement with the in-folded end flaps **4**, and thereafter the outer end wall plies **9** are folded downwardly upon their folding scores **10**, over the end flaps **4**, their retaining flaps **11** are engaged with and beneath the locking flaps or tabs **14**, and the set-up thus fully effected, as shown in Figs. 5, 7 and 8.

It will be noted that with the carton set up, as shown in Figs. 5 to 11, and particularly in Fig. 6, the openings or apertures **18** and **19** in the outer plies **7** of the end wall members and the end flaps **4**, respectively, register, and that where the overlapping ends of these end flaps **4** extend into that portion of the end wall area where these registering apertures are located the arcuate recesses **20** in the edge portions of these flaps serve to clear these apertures. Thus, these arcuate recesses serve not only as a means to provide support of the carton blanks for feeding to the setting-up machine, but to afford clearance at the registering apertures **18** and **19** while, nevertheless, making it possible to have the end flaps **4** of such length that they may overlap, as has been found most desirable.

Moreover (and this feature is of broad application in cartons formed from this general type of blank), the shape and extent of the recesses **20** facilitates the automatic erection of the carton in that, even with no exact timing of the relative folding of the flaps **4** as they are brought into overlapped relation, there will be no tendency for the end edges of the respective flaps to catch upon or jam against each other, and they will readily slide one upon the other and be guided by the arcuate recesses into desired overlapping position even though their free corners may oppositely overlie and underlie one another, for, as will be seen in Fig. 6, and also in Figs. 7, 10 and 11, the recesses are sufficiently deep to provide a clearance at *a* between them at their maximum depth. It will be noted, furthermore, that the length of the flaps **4** is such that they are too short to permit the lower corner of one to catch in the aperture **19** of the other when they are inwardly folded and are brought, relatively, into juxtaposition as the side wall members **2** are folded upwardly.

In assembling the handle member of Figs. 2 to 4 within the erected carton, as shown in Figs. 9 to 11, and preferably employing an automatic mechanism of an assembling machine which may form a part of, or be associated with, the carton erecting machine, these handle members, already completed, but in flat form as shown in Fig. 3, are arranged in a hopper with their edges bearing the wing members **27** and **28** as the leading edges for feeding purposes. As each of the handle members is individually fed from the hopper, with a set-up carton body properly indexed below it, plow means arranged in the mechanism at opposite ends of the feed member will plow apart the sets of wing members **27**, **28**, being aided in such operation by the reliefs **29** of the wing members **27**. With the parts of the handle member thus adjusted to substantially the arrangement shown in Fig. 4, it will be forced into the waiting carton body centrally longitudinally thereof, Fig. 10, with its end edges aligned with the slots **16** of the inner plies of the carton end walls and its outspread wing members **27**, **28** in register with the openings **15** but in position to overlie the ears **17** of these wall plies. Either during or after insertion of the handle member into the carton body in this manner, probes *b*, Fig 9, will be inserted through the apertures **18—19—20** to exert pressure upon the ears **17** and thus distort or displace them inwardly of the carton (Fig. 9) sufficiently to raise their lower edges to a height which will permit the wing members **27**, **28** to enter behind them and be thus positioned and retained by the thereafter released ears **17** and between these ears and the overlapped end flaps **4** and capable of sliding vertically between these parts while guided by the slots **16** in the inner plies of the end walls, as indicated in broken lines in Fig. 11. Also, as shown in Fig. 11, the wing members will arrest upward movement of the handle member when their upper edges abut against the top folds of the end walls.

Thus, whether the handle member is in its depressed position or is raised for carrying purposes, it will be held in proper assembled position in the carton by the retention of its wing members **27**, **28** between the inner and outer plies **7** and **9** of the end walls, and this has advantages in that it makes for facility in the introduction into the carton of the containers (beer cans) or the like articles that it is particularly designed to package.

Although the erection of the carton and the assembly of the handle member therewith have herein been described as primarily the functions of automatic machinery, it will be obvious that, as hereinbefore mentioned, these operations may be performed manually.

However, inasmuch as practically all packaging of com-

modities is now done automatically, in line production, the adaptability of the carton of the invention and its handle member to erection and assembly by automatic machinery, such as might be embodied in line production apparatus, is of major importance.

Having further reference to the handle member of the invention, it will be seen that by making it of a blank which will provide a folded edge longitudinally of both its top and bottom, in order to give it double thickness, rather than having a fold at one edge only, greater facility in performing the gluing operation is attained and, moreover, no spreading of the two thicknesses of the body of the member will occur when the plow-spreading of the wing members **27, 28** is performed.

Various changes and modifications are considered to be within the principle of the invention and the scope of the following claims.

What we claim is:

1. A carrier carton of paperboard material, including a body and a handle member, said body having a bottom member and wall members upstanding from said bottom member, at least one of said wall members comprising normally juxtaposed inner and outer plies, its said inner ply being provided with an opening extending vertically and laterally therein and of less height than said wall member, and a slot extending vertically in said inner ply from said opening and serving to divide said ply above said opening into two portions distortable relatively to said outer ply, said handle member being provided at its end with laterally offstanding wing means having portions of greater height than the height of said wall opening, the outer ply of said wall member being apertured for the reception of probe means wherewith while the said plies are juxtaposed portions of said inner ply adjacent to said opening and bordering on said slot may be distorted sufficiently to permit entrance of said wing means through said opening and into position between said inner and outer plies.

2. A carrier carton of paperboard material, including a body and a handle member, said body having a bottom member and well members upstanding from said bottom member, at least one of said wall members comprising normally juxtaposed inner and outer plies, its said inner ply being provided with an opening extending laterally and vertically therein and of less height than said wall member, a slot in said inner ply communicating with said opening and merging with an edge thereof in ear means projecting into said opening in the plane of said ply, said handle member being provided at its end with laterally offstanding wing means of greater height than the height of said opening in the area of said ear means, and the outer ply of said wall member being apertured for the reception of probe means wherewith while the wall plies are juxtaposed said ear means may be distorted out of the plane of said inner ply sufficiently to permit entrance of said wing means past said ear means and through said opening into position between said inner and outer plies.

3. A carrier carton of paperboard material, including a body and a handle member, said body having a bottom member and wall members upstanding from said bottom member, two of said wall members at opposite edges of said bottom member comprising normally juxtaposed inner and outer plies, the inner ply of each of said two members being provided with an opening extending laterally and vertically therein and of less height than its respective wall member, and a slot extending vertically of each of said inner plies from its said opening and serving to divide the said ply above its opening into two portions distortable relatively to the respective outer ply, said handle member being provided at its opposite ends with laterally offstanding wing means having portions of greater height than the height of said openings, the outer plies of said two wall members being apertured for the reception of probe means wherewith while the respective wall plies are juxtaposed portions of the inner plies of said wall members adjacent to said openings and bordering said slots may be distorted sufficiently to permit entrance of said wing means through said openings and between said inner and outer plies.

4. A carrier carton of paperboard material, including a body and a handle member, said body having a bottom member and side and end wall members upstanding from said bottom member, said end wall members having normally juxtaposed inner and outer plies and said side wall members having flaps interposed between and embraced in assembled relation by the inner and outer plies of said end wall members, the inner ply of each of said end wall members being provided with an opening extending laterally and vertically thereof and of less height than its respective wall member, and a slot extending vertically of each of said inner plies from its said opening and serving to divide the said ply above its opening into two portions distortable relatively to the respective outer ply, said handle member being provided at its opposite ends with wing means having portions of greater height than the height of said openings, the outer plies of said end wall members and the interposed flaps of said side wall members being apertured for the reception of probe means wherewith while their plies are juxtaposed portions of the inner plies of said end wall members may be distorted sufficiently to permit entrance of siad wing means through said openings and between said inner and outer plies.

5. A carrier carton of paperboard material, including a body and a handle member, said body having a bottom member and side and end wall members upstanding from said bottom member, said end wall members having normally juxtaposed inner and outer plies and said side wall members having end flaps interposed between and embraced in assembled relation by the inner and outer plies of said end wall members, the inner ply of each of said end wall members being provided with an opening extending laterally and vertically thereof and upwardly from said bottom member to a height less than the height of its respective wall member, said openings respectively merging into vertical slots and at their zones of such merging being provided with ears extending inwardly of the openings toward said bottom member, said handle member being provided at its ends with wing means of a height greater than the height from said bottom member to the inner margins of said ears, the outer plies of said end wall members and said end flaps being apertured in substantially horizontal alignment with said ears for the reception of probe means wherewith while the respective wall plies are juxtaposed said ears may be distorted out of the plane of said respective inner plies sufficiently to permit entrance of said wing means through said openings and between said inner and outer plies in position for guidance by said ears through said slots when the handle member is raised relatively to said end wall members.

6. A carrier carton as claimed in claim 5, in which the end flaps of said side wall members are overlapped between the plies of said end wall members, and the apertures of said flaps include recesses formed in their end edges.

7. A handle member for carrier cartons and the like, comprising in an integral sheet of paperboard material a main panel and auxiliary panels of substantially one-half the area of the main panel and arranged at the opposite longitudinal edges thereof and defined therefrom by longitudinal folding scores, said auxiliary panels being flat-folded over upon and in juxtaposition to the main panel upon said folding scores and secured in such flat-folded condition to said main panel, whereby the handle member is of double thickness throughout substantially its full area, the main panel and one of said auxiliary panels being provided at their opposite lateral edges with laterally offstanding wing members arranged

in juxtaposed pairs and bordering on the folding score between said panels and separated from each other by cuts aligned with said folding score, the wing members of said pairs being movable from their juxtaposed position to positions oppositely offstanding substantially normal to said panels.

8. A handle member as claimed in claim 7, in which the wing member of each pair at one face of said handle member is of less area than the other wing member of said pair, whereby a relief exposing a limited area of the juxtaposed other wing member of such pair is provided to aid in separation and relative outward bending of said wing members normal to said panels.

References Cited in the file of this patent

UNITED STATES PATENTS

375,518	Waddill	Dec. 27, 1887
1,451,963	Scruby	Apr. 17, 1923
2,113,097	Schaefer	Apr. 5, 1938
2,200,320	Zalkind	May 14, 1940
2,354,867	Larkin	Aug. 1, 1944
2,365,333	Cunningham	Dec. 19, 1944
2,404,067	Hill	July 16, 1946
2,424,716	Smart	July 29, 1947
2,443,256	Lebold	June 15, 1948
2,704,617	Stieve	Mar. 22, 1955
2,719,665	Tharpe et al.	Oct. 4, 1955

FOREIGN PATENTS

407,566	Great Britain	Mar. 22, 1934
566,366	Great Britain	Dec. 27, 1944
574,565	Great Britain	Jan. 10, 1946
652,182	Great Britain	Apr. 18, 1951