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S. LIGHTER
SKELETON CARTON

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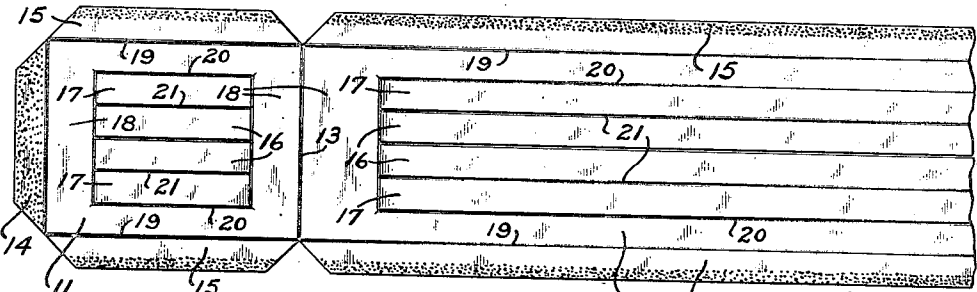


Fig. 1.

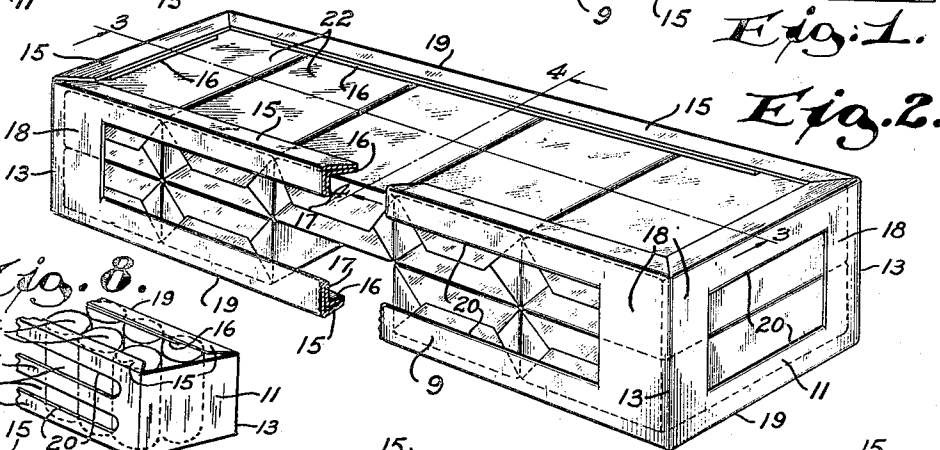


Fig. 2.

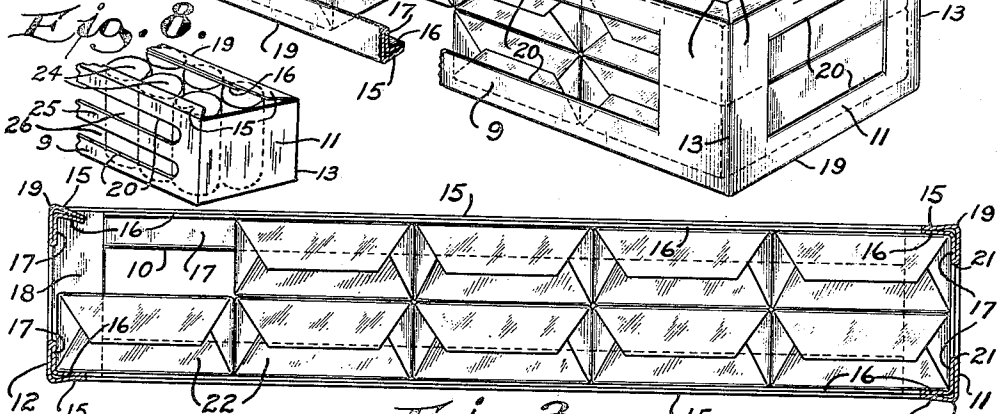


Fig. 3.

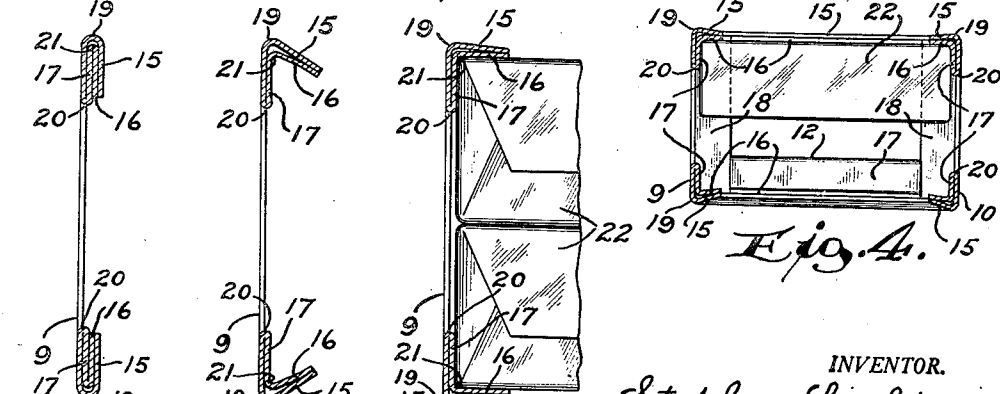


Fig. 4.



Fig. 5.

Fig. 6.

Fig. 7.

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SKELETON CARTON

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17 Claims. (Cl. 206—45.31)

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This invention relates generally to improvements in the art of packing diverse articles, and relates more particularly to improvements in the construction of cartons or carton frames for confining a group of similar articles in neat and compactly assembled order.

The primary object of my present invention is to provide a new and useful carton frame or frame-like carton which is simple and durable in construction, and which is also adapted to snugly confine and protect a group of neatly assembled similar articles while exposing and displaying portions thereof to view.

As shown and described in my prior Patent No. 2,395,558, granted February 26, 1946, I have heretofore proposed to provide a frame-like carton formed of cardboard or the like, and comprising an endless series of hinged end connected walls forming a collapsible article embracing band, each of the walls having an elongated inwardly biased resilient article engaging flange at its opposite edges formed integral with the wall stock and adapted to coact with the edge portions of a pre-arranged group of similar articles, so as to protect the articles and to maintain the group in compact and pre-arranged order while still visibly displaying the major portions of the individual articles and permitting ready removal of individual articles of the group.

Although this prior carton frame has proven highly successful in actual use, it requires considerable cardboard stock to produce the frame structure, due to the fact that the integral double or two-ply resilient article clamping flanges are produced entirely from stock material all of which originally extended outwardly away from the adjacent wall edges. I have now discovered that much of this excess stock may be saved without lessening the utility of these carton frames, by utilizing portions of the stock within the borders of the walls, to form substantial portions of the clamping flanges, and that this improved construction provides for even greater display or visibility of the confined articles without undesirably diminishing the strength of the final assemblage.

It is therefore a more specific object of the present invention to provide an improved display carton especially adapted to effectively confine a pre-arranged group of like articles, and which may be produced at moderate cost and with minimum waste of stock.

Another object of this invention is to provide an improved skeleton carton for simultaneously and snugly confining and displaying a group of

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nested relatively small articles or commodity packages, and which is strong and durable in structure and efficient in operation.

A further specific object of my invention is to provide an improved frame-like cardboard carton adapted to neatly confine a plurality of relatively small articles such as cigarette packages, beer cans, or the like in predetermined order, while visibly displaying the major portions of the small units and permitting convenient removal of the individual articles without disturbing others.

Still another object of the invention is to provide an inexpensive but highly effective carton frame for retaining a number of interchangeably similar rectangular prismatic articles in pre-assembled group arrangement, and which may be advantageously utilized for diverse display purposes.

An additional specific object of the present invention is to provide a skeleton frame adapted to clampingly engage the edge portions of a group of neatly assembled prismatic packages or the like, while exposing identifying indicia on the confined articles to view and thereby eliminating necessity of providing specially printed additional outer wrappers for the batch of smaller packages.

These and other objects and advantages of the invention will be apparent from the following detailed description.

A clear conception of the features constituting my present improvement, and of the mode of manufacturing and of utilizing several types of skeleton cartons embodying the invention, may be had by referring to the drawing accompanying and forming a part of this specification wherein like reference characters designate the same or similar parts in the various views.

Fig. 1 is a fragmentary plan view of a portion of a cardboard blank which may be utilized in the production of a typical skeleton carton embodying the invention;

Fig. 2 is a perspective view of one of my improved cartons applied to a group of cigarette packages or the like, one of which has been removed in order to more clearly reveal the carton frame structure;

Fig. 3 is a longitudinal section through the carton and package assemblage of Fig. 2, taken along the vertical plane of the line 3—3, but having an end package removed;

Fig. 4 is a transverse section through the same assemblage, taken along the vertical plane of the line 4—4 of Fig. 2 with the lower row of packages removed;

Fig. 5 is an enlarged transverse section through

a wall of one of the improved cartons, showing the opposite edge flanges fully collapsed;

Fig. 6 is another similarly enlarged transverse section through the carton wall, showing the opposite edge flanges naturally distended as when the frame is initially assembled;

Fig. 7 is still another similarly enlarged transverse section through the same wall showing the opposite edge walls clampingly engaging several articles or small packages confined in the carton; and

Fig. 8 is a perspective view of a fragment of a modified skeleton carton embodying the invention and applied to a group of beer cans or the like, this view being drawn to a reduced scale.

While the invention has been shown and described herein as having been applied to improved skeleton cartons formed of cardboard and especially adapted to confine and display groups of only a few types of articles, it is not my desire or intent to unnecessarily restrict the utility of the improved structure by virtue of these typical embodiments.

Referring to Figs. 1 to 7 of the drawing, the improved skeleton carton blanks, a fragment of one of which is shown in Fig. 1, may be produced in rapid succession from an advancing elongated strip or ribbon of relatively stiff cardboard stock, with the aid of suitable punches or dies; and in cases where the blanks are relatively short each of the successive sections severed from the advancing ribbon may comprise a single unitary blank having two elongated side walls 9, 10 and a pair of shorter end walls 11, 12 hingedly connected to the adjacent side walls along transverse score lines 13. The free end of one of the end walls may be provided with an attaching flap 14 for adhesively fastening the same to the free end of the side wall which is farthest from the said end wall, and to thereby assemble the blank into a rectangular collapsible structure bounded by the four walls 9, 10, 11, 12 but open at the top and bottom, in an obvious manner. In some cases, the blank may however be formed of several sections adhesively or otherwise united to form the final assembly.

Each of the side and end walls 9, 10, 11, 12 is provided with an integral resilient outer flange portion 15 extending along each of its opposite edges and throughout the entire length thereof; and each wall 9, 10, 11, 12 is also provided with a pair of inner resilient flange portions 16 cut from the body of the adjacent wall and integrally united therewith by an intervening hinge section 17. The formation and manner of producing these flange portions 15, 16 and the hinge sections 17, is clearly illustrated in Fig. 1, and it will be noted that the inner flange portions 16 and their hinge sections 17 are of somewhat less length than the corresponding walls 9, 10, 11, 12 so as not to destroy the hinges between the adjoining walls and to retain a sturdy corner post of panel 18 at each hinged end of each wall. Each of the outer flange portions 15 is foldable inwardly relative to its carrying wall 9, 10, 11, 12 along a score line 19, and each hinge section 17 is also foldable against the inside of its carrier wall along another score line 20, while each inner flange portion 16 is foldable inwardly away from its supporting hinge section 17 along still another score line 21. When the flange portions 15, 16 and sections 17 have been thus properly folded, the free edges of the coacting flange portions 15, 16 associated with the oppo-

site edges of each wall 9, 10, 11, 12 should be aligned and may be firmly adhesively united so as to provide resilient two-ply inwardly projecting flanges extending along both the open top and open bottom of the skeleton carton produced by the cut-outs in the walls.

The composite inwardly projecting flanges thus formed or produced by the firmly united coacting flange portions 15, 16 are preferably foldable flatwise against their carrying walls as indicated in Fig. 5, in order to permit compact collapse of each carton, and these composite article retainer flanges should also be resiliently biased to assume positions such as shown in Fig. 6 when the carton is initially distended. In order to obtain this inward biasing effect, the hinge sections 17 may be made slightly narrower than the wall edge portions with which they are hingedly connected along the score lines 20, and the inner flange portions 16 may also be formed slightly narrower than the outer flange portions 15. When so constructed, and after the adjacent flange portions 15, 16 have been properly united with their free edges in perfect alignment, each composite clamping flange will not only be resilient, but will also be biased to produce proper clamping effect against the confined articles or packages 22, as depicted in Fig. 7, due to the fact that outward spreading of the double flange will tend to stretch the narrower inner flange strip 16 while subjecting the wider outer strip 15 to compression. While the flange portions 15, 16 have been shown as being adhesively united only at their free edge portions, they may also be adhesively joined throughout their entire areas of coaction, and the sections 17 may also be likewise attached to the adjacent inner surfaces of their supporting walls 9, 10, 11, 12, without destroying the desired resiliency and proper biasing of the clamping flanges.

After the skeleton cartons have been properly constructed and assembled as above described, they may be either collapsed or distended at will. When the carton assemblies are collapsed, the clamping flanges thereof swing inwardly against their carrier walls 9, 10, 11, 12 as shown in Fig. 5, and the walls fold along the corner hinges, so as to cause each carton to assume the form of a flat strip or relatively thin plate, and these collapsed structures obviously occupy little space and may be compactly stacked or snugly confined. If it becomes desirable to load one of the improved cartons, it is only necessary to distend the same into rectangular box formation as illustrated in Figs. 2, 3 and 4, whereupon the resilient clamping flanges will initially assume the position shown in Fig. 6, and both the top and bottom of the distended structure will be open for insertion of the articles or smaller packages 22. A group of the packages 22 may then be applied within the skeleton carton through the open top or bottom, and snugly nested in the frame as illustrated in Figs. 2, 3 and 4; and during such application of the contents, the composite resilient flanges must be distorted slightly so as to cause each inwardly biased flange to clampingly engage the adjacent end, or edge portion of each package 22, as clearly depicted in Fig. 7. The articles or packages 22 will thus be firmly held within the carton frame, but the successive articles may be readily removed independently of each other, and are plainly visible through the open top and bottom as well as through the openings in the walls of the carton, as shown in Figs. 2, 3 and 4.

The improved skeleton cartons may also be advantageously utilized to pack groups of relatively tall articles such as commodity laden cans or boxes, and in such cases it is preferable to modify the blanks as shown in Fig. 8. This modified carton has the inner flange portions 16 cut from the bodies of the adjacent walls, but due to the greater height of the beer laden cans 24 as compared to that of two layers of cigarette packages 22, the upper and lower cut-outs produced by removal of the inner flanges are separated by a side wall reinforcing strip 25 of the same length as the openings 26. These strips 25 vastly strengthen the side walls 9, 10, and the cans 24 are effectively confined within this modified package or skeleton carton by composite resilient flanges and may be individually removed in the same manner as hereinabove described.

While the window openings of the improved skeleton cartons serve to display the packages confined within the skeleton frames, these openings also permit the cartons to be manufactured at minimum cost and with blanks of limited dimensions, without sacrificing strength and resilience of the article clamping flanges. This result is accomplished by forming the inner flange portions 16 from the bodies of the walls 9, 10, 11, 12, instead of making them integral with the outer flange portions as in my prior display carton, and the hinge sections 17 coact with the adjacent walls to provide rigid two-ply beams connecting the corner posts 18 above and below the side openings produced by the cut-outs. As previously indicated, the flange portions 15, 16 may be united and the hinge sections 17 may be secured to the adjacent inner surfaces of their carrying walls, either locally or throughout the entire areas thereof, but the clamping flanges should be resilient and biased inwardly in order to insure most effective clamping of the packages 22. The improved clamping flanges may be applied to all or only the longer side walls of display cartons of various sizes and shapes, and these flanges may be of any desired width, but preferably extend throughout the major lengths of at least the adjacent walls 9, 10, and along both edges of these walls. In relatively tall or high cartons, the reinforcing strips 25 serve to strengthen the structures, and these strips do not necessitate the use of stock which could be saved.

From the foregoing detailed description, it should be apparent that the present improvement provides a very simple and exceedingly strong and durable skeleton carton adapted to snugly confine a group of smaller articles or packages in nested condition and in neatly prearranged order, while at the same time visibly displaying various portions of the confined packages. The carton units may obviously be readily manufactured with minimum waste of stock, and the smaller articles such as packages or cans may be conveniently independently inserted or removed without disturbing others. The confinement of the packages 22 is moreover effected without damaging the same, and the entire final package may be covered by a transparent or other protective wrapper, if so desired. The improved frame structures may also be readily collapsed or distended, and occupy little space when collapsed while avoiding excessive bulk in the final packages when assembled. The invention has proven highly satisfactory in actual application, and the improved carton obviously presents a neat and highly finished appearance when properly constructed and applied.

It should be understood that it is not desired to limit this invention to the exact details of construction or to the precise mode of use, herein shown and described, for various modifications within the scope of the appended claims may occur to persons skilled in the art.

I claim:

1. A skeleton carton comprising, a wall having an integral article engaging flange extending along its edge and inwardly relative to the article engaging surface thereof, said flange consisting of an outer portion formed integral with the adjacent wall edge and an inner portion formed integral with the medial portion of said wall and united at its free edge with the corresponding edge of said outer flange portion.

2. A skeleton carton comprising, a wall having an integral article engaging flange extending along its edge and inwardly relative to the article engaging surface thereof, said flange consisting of an outer portion formed integral with the adjacent wall edge and an inner portion formed integral with the medial portion of said wall and united at its free edge with the corresponding edge of said outer flange portion, the opposite edge of said inner flange portion being connected to said wall remote from said wall edge by an integral hinge section.

3. A skeleton carton comprising, a wall having an inwardly directed resilient article engaging flange, said flange consisting of outer and inner portions united along their free edges and having their opposite edges formed integral with the outer edge and with the medial body portion respectively of the wall.

4. A skeleton carton comprising, a wall having an inwardly directed resilient article engaging flange, said flange consisting of outer and inner portions united along their free edges and having their opposite edges formed integral with the outer edge and with the medial body portion respectively of the wall, the inner edge of said inner flange portion being connected with said medial wall portion by an integral hinge section.

5. A skeleton carton comprising, a side wall having an inwardly directed resilient article engaging flange extending along the outer wall edge and biased inwardly at an acute angle relative to the wall, said flange consisting of an outer flange portion formed integral with said wall edge and an inner portion formed integral with said wall remote from said edge and having its free edge adhesively connected to the free edge of said outer flange portion.

6. A skeleton carton comprising, a side wall having an inwardly directed resilient article engaging flange extending along the outer wall edge and biased inwardly at an acute angle relative to the wall, said flange consisting of an outer flange portion formed integral with said wall edge and an inner portion formed integral with said wall remote from said edge and having its free edge adhesively connected to the free edge of said outer flange portion, said inner flange portion being of less width than said outer flange portion.

7. A skeleton carton comprising, a side wall having an inwardly directed resilient article engaging flange extending along the outer wall edge and biased inwardly at an acute angle relative to the wall, said flange consisting of an outer flange portion formed integral with said wall edge and an inner portion formed integral with said wall remote from said edge and having its free edge adhesively connected to the free edge of said outer flange portion, said inner flange por-

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tion being connected to said wall by an integral hinge section lying flat against the inner wall surface.

8. A skeleton carton comprising, a side wall having an inwardly directed resilient article engaging flange extending along the outer wall edge and biased inwardly at an acute angle relative to the wall, said flange consisting of an outer flange portion formed integral with said wall edge and an inner portion formed integral with said wall remote from said edge and having its free edge adhesively connected to the free edge of said outer flange portion, said flange being foldable against the inner surface of said wall.

9. A skeleton carton comprising, a side wall having an inwardly directed resilient article engaging flange extending along the outer wall edge and biased inwardly at an acute angle relative to the wall, said flange consisting of an outer flange portion formed integral with said wall edge and an inner portion formed integral with said wall remote from said edge and having its free edge adhesively connected to the free edge of said outer flange portion, said inner flange portion being connected to said wall by an integral hinge section lying flat against the inner wall surface and said flange being foldable flat against said hinge section.

10. A skeleton carton comprising, a series of hingedly connected walls forming a collapsible article embracing band, each of said walls having resilient articles engaging flanges extending along its opposite edges, each flange consisting of an outer portion formed integral with the adjacent wall edge and an inner portion formed integral with the wall remote from said edge and united at its free edge with the corresponding free edge of the adjacent outer flange portion.

11. A skeleton carton comprising, a series of hingedly connected walls forming a collapsible article embracing band, each of said walls having resilient article engaging flanges extending along its opposite edges, each flange consisting of an outer portion formed integral with the adjacent wall edge and an inner portion formed integral with the wall remote from said edge and united at its free edge with the corresponding free edge of the adjacent outer flange portion, the opposite inner edge of each inner flange portion being connected to the adjacent wall by an integral hinge section.

12. A skeleton carton comprising, a series of hingedly connected walls forming a collapsible article embracing band, each of said walls having an inwardly biased resilient flange extending along each of its opposite outer edges, each flange consisting of an outer flange portion formed integral with the adjacent wall edge and an inner narrower portion formed integral with a hinge section which is formed integral with the adjacent wall remote from said edge and lies flat against the intervening wall portion, said flange being foldable flatwise against said hinge section when the carton is collapsed.

13. An article confining and clamping structure comprising, a wall having a longitudinal

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opening therein and being provided with resilient inwardly biased article clamping flanges along each of its opposite longitudinal outer edges, each flange consisting of outer and inner interconnected strips one of which is formed integral with the adjacent outer edge of the wall while the other is formed integral with the adjacent bounding edge of the opening.

14. An article confining and clamping structure comprising, a wall having a longitudinal opening therein and being provided with resilient inwardly biased article clamping flanges along each of its opposite longitudinal outer edges, each flange consisting of outer and inner adhesively united strips the outer of which is formed integral with the adjacent outer edge of the wall while the inner strip is formed integral with the adjacent bounding edge of the opening.

15. An article confining and clamping structure comprising, a wall having a longitudinal opening therein and being provided with resilient inwardly biased article clamping flanges along each of its opposite longitudinal outer edges, each flange consisting of an outer relatively wide strip and an inner narrower strip adhesively united throughout substantially the entire area of the latter, one of said strips being formed integral with the adjacent outer edge of the wall while the other is formed integral with the adjacent bounding edge of the opening.

16. An article confining and clamping structure comprising, a wall having a longitudinal opening therein and being provided with resilient inwardly biased article clamping flanges along its opposite longitudinal outer edges, each flange consisting of an outer relatively wide strip formed integral with the adjacent outer edge of the wall and adhesively united throughout substantially its entire inner area with a narrower inner strip formed integral with the adjacent bounding edge of the opening.

17. An article confining and clamping structure comprising, a wall having a longitudinal opening therein and being provided with a resilient inwardly biased article clamping flange along a longitudinal edge thereof, said flange consisting of outer and inner interconnected strips one of which is formed integral with the adjacent outer edge of the wall while the other is formed integral with the adjacent bounding edge of the opening, and means associated with the opposite longitudinal edge of the wall and cooperating with the confined articles to cause said flange to effect article clamping.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,368,797	Ballar	Feb. 6, 1945
2,395,558	Lighter	Feb. 26, 1946