

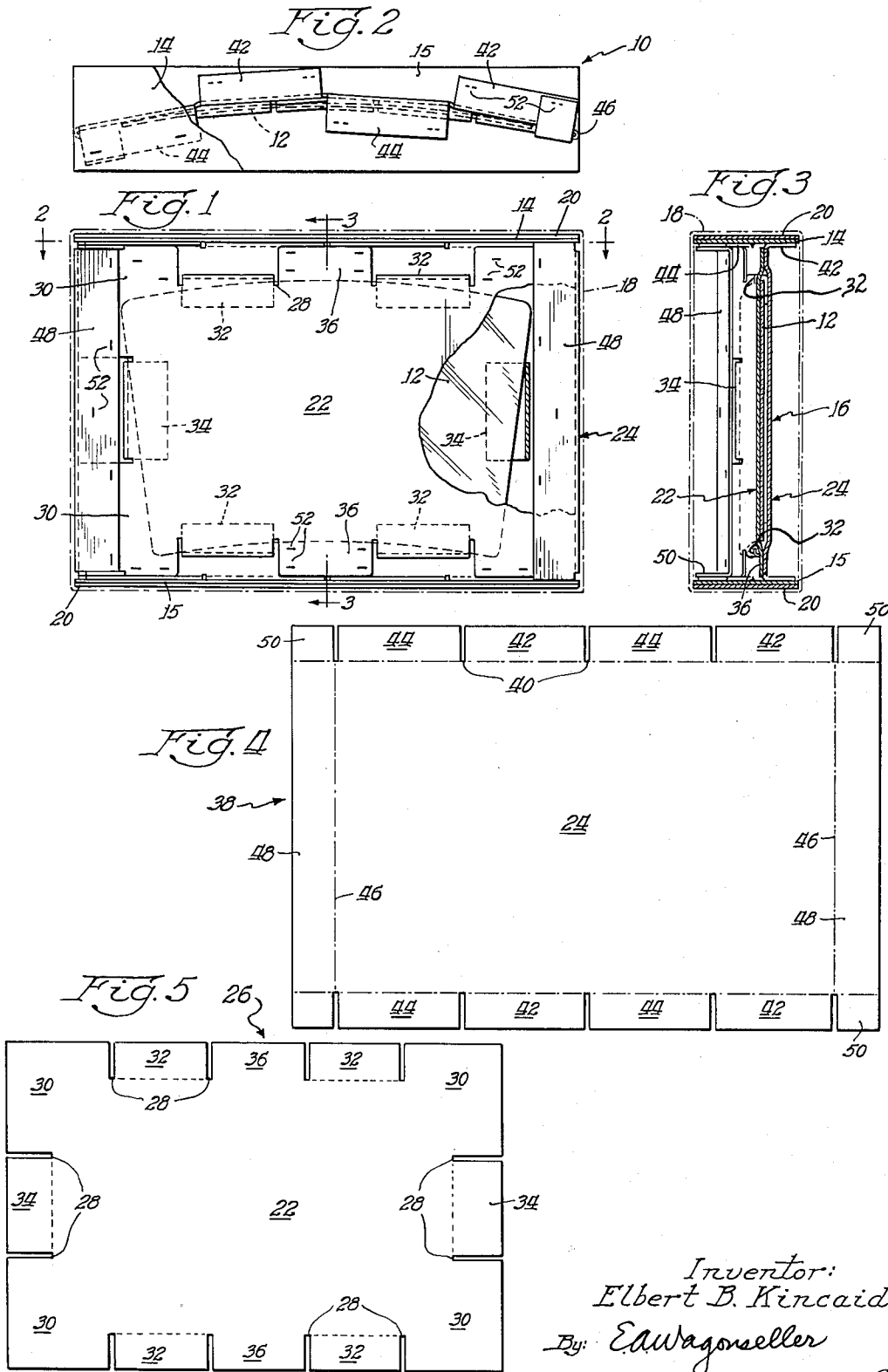
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PROTECTIVE SHIPPING CASE

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PROTECTIVE SHIPPING CASE

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The present invention relates to shipping cases and more particularly to an improved protective shipping case or package for frangible articles of sheet form and of considerable extent, as for example plate glass sheets or the like.

The improved shipping case comprising the present invention has been designed primarily for the packaging and shipping of automobile windshields, many of which are of curvilinear one-piece construction. The invention is, however, capable of other uses and the same may, if desired, with or without modification, be employed for the packaging of other articles of sheet form whether the same be curvilinear or planar.

The packaging and shipping of plate glass articles, particularly those having considerable surface extent, has always presented certain difficulties, principal among which has been not only the difficulty of protecting the article from damage, but also the danger presented by the packaged article when handling the same. Articles such as windshield glass and other comparatively massive plate glass articles, whether curved or planar, are relatively heavy and the edges, and particularly the corners thereof, constitute projections which render the packaged article difficult of handling and which also are hazardous. Due to the relatively heavy weight of articles of this character, and due to the fact that frequently it is found necessary or expedient to position the package so that the article stands on edge, there is a tendency for the edge of the article to cut or break through the material of the package and thus become exposed. Sometimes in the handling of the package by inexperienced handlers, the package is positioned so that the entire weight thereof rests on one corner, as for example when the package is "walked" on adjacent corners. This type of handling frequently results in a sufficiently great thrust on the material of the package by the sharp corner of the plate glass article so that the corner cuts through the material of the package and becomes exposed and thus liable to breakage as well as presenting a hazard to further handling of the package.

The present invention is designed to overcome the above noted limitations that are attendant upon conventional packaging of articles of this character and, toward this end, it contemplates the provision of a relatively simple and inexpensive packing case for such articles which will protect the articles from shocks as well as preventing the case from becoming ruptured when such shocks are encountered.

The provision of a packing and shipping case of the character briefly outlined above being among the principal objects of the invention, a further object is to provide such a case in which protective cushioning means are provided for both sides of the article while at the same time the latter is positioned within the case in such a manner that the sharp edges and corners thereof are maintained an appreciable distance from the sides of the package as a whole.

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Another object of the invention is to provide a shipping case of this character in which the protective cushioning means referred to above is coextensive with the opposite faces of the article and in intimate contact therewith and also in which the peripheral edges of the article are confined within close limits by additional cushioning means so that there will be no shifting of the position of the article within the package during handling thereof.

Yet another object of the invention, in the packaging of curved articles of sheet form for shipment, is to provide a shipping case which affords adequate protection for the article, as well as for the persons handling the packaged article, yet one which is of a size and shape that does not materially exceed the overall volumetric displacement of the unpackaged article. Because of this latter feature, the packaged article consumes but little storage space and a greater number of the articles may be stored in a given floor or shelf space.

The provision of a packing and shipping case for glass articles of sheet form, whether curved or otherwise, which may be constructed from a relatively few pieces of paper-board stock in flat blank form and which therefore is economical from the point of view of manufacturing costs; one which is easily set up on the article undergoing packaging and which may be secured in its set up condition by a stitch stapling process; one which is capable of easy removal from the article during unpacking of the latter; one which will accommodate articles of different dimensions within fairly wide limits; and one which otherwise is well adapted to perform the services required of it, are further desiderata that have been borne in mind in the production and development of the present invention.

In the accompanying single sheet of drawing forming a part of this specification, one embodiment of the invention has been shown.

In the drawing:

Fig. 1 is a bottom plan view of an inner package unit or article suspension assembly constructed in accordance with the principles of the present invention and showing the same applied to an article, which, for illustrative purposes, is in the form of a curvilinear sheet of glass.

Fig. 2 is a sectional view taken substantially along the line 2—2 of Fig. 1 with the article in upright position. In this view certain parts have been broken away to more clearly reveal the nature of the invention.

Fig. 3 is a sectional view taken substantially along the line 3—3 of Fig. 1.

Fig. 4 is a plan view of a top blank employed in connection with the invention, and

Fig. 5 is a plan view of a bottom blank employed in connection with the invention.

Referring now to the drawing in detail and particularly to Figs. 1, 2 and 3, an article-supporting assembly or inner package unit is designated in its entirety at 10 and is adapted to substantially enclose and support an article such as the illustrated sheet of glass 12 which may be a curvilinear automobile windshield or the like. The assembly or unit 10, when applied to the article 12 is generally H-shape in transverse cross section, consisting as it does of vertical side members 14 and 15 and a connecting article-enclosing and supporting envelope 16 of two-piece construction the nature and function of which will be made clear presently. The entire assembly 10 is adapted to be enclosed within an outer container or shell such as is indicated at 18 in Fig. 3 by the dash-dot line and which may be of more or less conventional rectilinear design, the assembly being positioned in the shell with a pair of side wall pads 20 on the opposite sides thereof.

As shown in Figs. 1, 2 and 3, the shipping package as a whole, with the article disposed therein, is generally flat rectilinear design, which is to say, it comprises a

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six-sided structure longer than it is wide and having relatively little thickness. The package may be positioned for storage purposes on any one of its sides or edges but for reference purposes to facilitate the description, it may be considered as resting on a major face so that its thickness becomes its height and with the curvilinear article bowed downwardly as shown in Fig. 2.

The supporting envelope 16 is comprised of a bottom protective covering or liner 22 and a top protective covering or liner 24, the two liners having opposed inner faces which are coextensive with the underneath and top surfaces respectively of the article 12 and which serve to substantially enclose the article therebetween in sandwich fashion.

The bottom liner 22 is formed from the blank 26 shown in Fig. 5 and is comprised of a single sheet of paperboard material which may be of corrugated paperboard stock. The blank 26 is rectangular in form and is slotted inwardly of its peripheral edge at spaced regions to provide a series of voids 28 representing a definite removal of some of the paperboard material thus to form a series of flaps or tongues which extend outwardly around the periphery of the blank. The slots 28 provide four corner spacer tongues 30; four foldable flaps 32 along the longitudinal sides of the blank; two foldable flaps 34 on the transverse ends of the blank, and a pair of non-foldable spacer tongues 36 on the sides of the blank. The overall dimensions of the blank 26 are somewhat greater than the corresponding overall dimensions of the sheet article 12 so that when the blank is fitted or placed against the underneath concave face of the article as shown in Fig. 2, the foldable flaps 32 and 34 will to a greater or lesser extent overlap the peripheral edge of the article. With the blank 26 thus in position, the flaps 32 and 34 may be folded or reversed upon themselves along a convenient fold line established in the vicinity of the edges of the article and about the adjacent edge of the article thus to center or fix the article relative to the blank 26.

The folding of the blank 26 on the article 12 in the manner just described is not an exact process or operation and the article need not be exactly centered upon the blank with precise measurement. The operator will bend the flaps 32 and 34 over the peripheral edge of the article as best suits his initial fitting of the article on the face of the blank. While it is possible to fold the flaps 32 or 34 on an angle bias to more intimately encase the edges of the article, if the corrugations of the paperboard material run longitudinally of the blank it will be more convenient to fold the flaps perpendicular to the edges of the blank and thus not fold across the individual flutes of the corrugations. Irrespective however of the manner of folding of the flaps 32 and 34, the essential features of the invention are not altered.

The top liner 24 is formed from the blank 38 of Fig. 4 and is comprised of a single sheet of material which, like the blank 26, may be of corrugated paperboard stock. The blank is rectangular in form and is slotted inwardly as at 40 around the peripheral edge thereof with the slots involving a definite removal of some of the paperboard material. The slots 40 provide therebetween a series of upwardly bendable attachment tabs 42 and downwardly bendable tabs 44 with the tabs on opposite longitudinal sides of the blank being designed for attachment to the two vertical side members 14 and 15 respectively in a manner that will be made clear presently. A pair of fold lines 46 are provided in the blank 38 transversely thereof adjacent to the ends of the blank and these fold lines provide a pair of end strips 48 and small attachment tabs 50 at the corners of the blank.

The overall dimensions of the blank 38 are greater than those of the blank 26 and the blank 38 is positioned over the upper convex surface of the article as shown in Fig. 1 so that all of the tabs 42, 44 and 50 lie completely over (beyond) the peripheral edge of the article 12 as well as over (beyond) the extreme peripheral edge of the

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underlying blank 26 when the latter is folded upon the article in the manner previously described. With the blank 38 thus positioned over the article, the projecting non-foldable tongues 30 and 36 may be stapled or otherwise attached to the body of the blank 38 as indicated at 52.

The transverse strips 48 are adapted to be folded downwardly and around the transverse ends of the lower or underneath liner 22 as shown in Figs. 1 and 3 and secured in folded position by staples 52 which thus pass through the two thicknesses of the material of the blank 38 and through the corner tongues 30 of the blank 26.

At this stage in the assembly of the shipping case on the article 12, the two liners 22 and 24 are positioned in enclosing relation about the article so that the latter is substantially concealed between the two liners. The envelope 16, which is comprised of the two assembled liners 22 and 24 may then be secured to the two vertical side members 14 and 15 by bending the attachment tabs 42 upwardly as viewed in Fig. 2 and by bending the attachment tabs 44 downwardly and attaching these tabs 42 and 44 to the inner faces of the side members 14 and 15 with staples 52.

It is to be noted that the small corner tab 50 on the blank 38 will overlie the attachment tabs 42 when the strips 48 are first folded over the transverse edges of the blank 26. These corner tabs 50 may thus be folded with the attachment tabs which they overlie and stapled therewith to the vertical side members 14 and 15 as shown in Fig. 2.

With the envelope 16 thus enclosing the article 12 and secured to the side members 14 and 15, the whole constitutes an inner protective cushioning unit for supporting the article within an outer carton shell such as the rectangular shell 18 which is shown in dotted lines and which may be of conventional design. The side wall pads or liners 20 may be employed if desired to maintain the various fastening devices or staples 52 from binding against the walls of the shell during insertion of the cushioning unit into or removal of the same from the outer shell.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawings or described in this specification as various changes in the details of construction may be resorted to without departing from the spirit of the invention. The invention is therefore intended to be limited only as required by the wording of the accompanying claims.

I claim:

1. In combination, an article of sheet form and a shipping case for such article comprising, a two-piece envelope for the article comprising a pair of generally rectangular paperboard liner members having opposed inner faces coextensive with the opposite faces of the article and positioned with one member on each side of the article to sandwich the article therebetween, and at least one bendable flap formed along each of the peripheral edges of one of said liner members by spaced slots extending inwardly of the member from such edges, said flaps being folded around the peripheral edge of the article and extending inwardly of said edge of the article and having a portion thereof positioned between the article and the inner face of the other liner member for retaining the article against shifting movement relative to the liner member on which the flaps are formed, said one liner member also having spaced peripheral flaps extending rigidly outward beyond the article edges, the other of said liner members having a greater overall extent between one pair of relatively opposite edges thereof than between the corresponding edges of the other liner and being secured in face-to-face relation to some of said rigidly extending flaps, said other liner member having end portions along its other pair of relatively opposite edges, said end portions being folded around the corresponding edges of the other liner and against the outer face of

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such other liner and secured to the outer face of the latter.

2. In combination, an article such as a curved glass window and a paperboard shipping case for such article comprising, an inner packaging assembly including a generally flat envelope of rectangular outline for the article and a pair of flat side members extending generally at right angles to the general plane of the envelope and secured thereto along opposite edges thereof, said envelope comprising a pair of spaced and generally parallel liner members, said liner members having opposed inner faces each at least coextensive with the correspondingly adjacent faces of the article and positioned to sandwich the article therebetween, one of said liner members having at least one pair of substantially parallel spaced cuts extending inward from each edge thereof to provide a flap between each such pair of cuts, each of such flaps being folded around the peripheral edge of the article and projecting between the article and the inner face of the other liner member, each of said liner members having edge portions extending outward beyond the peripheral edge of the article, staples securing said edge portions of the liners together in face-to-face contact, a series of spaced attachment tabs formed on the outward extending portions of the other liner member along one pair of opposite edge margins and extending substantially at right angles to the general plane of the envelope, and staples securing said attachment tabs to the medial regions of said side members, a portion of said other liner member along each of its other pair of opposite edge margins being folded and secured over an adjacent edge margin of said one liner member.

3. In combination, an article such as a curved glass window and a paperboard shipping case for such article comprising, an inner packaging assembly including a generally flat envelope of rectangular outline for the article and a pair of flat side members extending generally at right angles to the general plane of the envelope and secured thereto along opposite edges thereof, said envelope comprising a pair of spaced and generally parallel liner

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members, said liner members having opposed inner faces each at least coextensive with the correspondingly adjacent faces of the article and positioned to sandwich the article therebetween, one of said liner members having at least one pair of substantially parallel spaced cuts extending inward from each edge thereof to provide a flap between each such pair of cuts, each of such flaps being folded around the peripheral edge of the article and projecting between the article and the inner face of the other liner member, each of said liner members having edge portions extending outward beyond the peripheral edge of the article, staples securing said edge portions of the liners together in face-to-face contact, a series of spaced attachment tabs formed on the outward extending portions of the other liner member along one pair of opposite edge margins and extending substantially at right angles to the general plane of the envelope, and staples securing said attachment tabs to the medial regions of said side members, a portion of said other liner member along each of its other pair of opposite edge margins being folded and secured over an adjacent edge margin of said one liner member, said other liner member having corner tabs integral with the opposite ends of said folded margin portions, said corner tabs being secured to the respectively adjacent side members.

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