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3,403,778

**WINDSHIELD CARRIER PACK**

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 Filed Apr. 6, 1967, Ser. No. 629,009  
 2 Claims. (Cl. 206-62)

**ABSTRACT OF THE DISCLOSURE**

A shipping package for a windshield is provided wherein the windshield is mounted via peripherally located tabs on a one piece I-shaped interliner packing unit which is then inserted into a suitable container for shipping and storage. The interliner forms a structural part of the container and isolates the windshield from the container walls.

*Brief summary of invention*

This invention relates to a package for shipping frangible articles such as automobile windshields or the like.

The invention was derived as a result of efforts to develop a suitable package which would facilitate the shipping, handling and storage of relatively thin sheets of frangible material such as sheets of glass. The objective was to build a lightweight, but, strong package, preferably from corrugated board, which could withstand the rough treatment normally encountered in shipping and handling. It was particularly important to develop an inexpensive package requiring relatively few separate pieces which could be easily assembled by the user.

The prior art packages for frangible articles such as glass windows were formed either in two parts in a sandwich relationship with the frangible article, or, were fitted into a container with separately inserted pads and braces protecting the frangible article. These packages proved expensive to manufacture and required a great deal of time and labor to assemble. Many of these earlier packages were also relatively heavy and cumbersome, resulting in excessive transportation costs for the package itself.

The windshields and rear windows of automobiles presently being produced are generally quite large and often are of a compound curvature. Because of their unique shape and structural characteristics, packaging of the individual units for shipment is extremely difficult. While such windows possess considerable structural strength, it is necessary to protect them against sharp, heavy blows, and it is particularly important to protect their edges from being chipped or abraded.

The present invention accomplishes the above results by providing a package which is adapted to support the sheet of glass or other frangible article over a limited surface area at the edge of the glass without excessive crushing and without the glass becoming embedded in the material of the packing element.

The present invention further provides a package suitable for housing windshields and other frangible articles of varying sizes. This adaptability including the fact that the present invention uses only a minimum number of parts to suitably locate and support the frangible article in suspended relation to the walls of the container, effectively protects the article from damage to its edges.

There are two basic elements which make up the invention. A container element in which the windshield or other frangible article is shipped, and a one piece I-shaped interliner packing unit on which the article is mounted, then, inserted into the container. When the package is completely assembled, the interliner element becomes an integral part of the container and gives the

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package structural stability. The interliner is cut and scored to assume the I-shape when assembled and has additional tab-like members die-cut therein which engage and confine the periphery of the frangible article when it is mounted thereon. The invention also requires that a suitable restraining means be employed around the tabs to maintain the tabs in releasable engagement with the edges of the frangible article.

*Brief description of the drawing*

One form of the invention is shown in the accompanying drawing which may be briefly described as follows:

FIGURE 1 is a perspective view of the assembled package constructed according to the invention;

FIGURE 2 is an end view of the assembled package; and,

FIGURE 3 is a plan view of the interliner member with the frangible member mounted thereon.

*Detailed description*

With reference now to the drawing there is illustrated in FIGURE 1 a package according to the invention which comprises a standard corrugated paperboard shipping container 10 having a top wall 12, bottom wall 14, front wall 16, rear wall 18 and end walls 20, 22. The container is shown in chain dotted lines for the sake of simplicity and so that the windshield 24, or other frangible article may be seen mounted thereon. The curved windshield 24 may be clearly seen as being releasably supported within the container 10 in spaced relation to all of the walls of the container. Serving to support and locate the windshield 24 within the container is a one piece interliner member 26 having tab-like elements 28, 30, 32 and 34 die-cut therein in the general location of the periphery of the windshield in the areas of greatest stress. The interliner member is preferably made from a corrugated paperboard blank 36 (FIGURE 3) and is cut along lines 38, 40 and 42, and, scored along lines 44 and 46 so that the interliner member as assembled assumes an I-shaped configuration when viewed from the end (FIGURE 2).

During assembly of the windshield or other frangible article on the interliner member 26, as shown in FIGURE 3, the windshield is placed horizontally on the blank 36. The tab elements 28, 30, 32, 34 are then bent around the peripheral edge of the windshield and a suitable restraining band 48 is threaded through the openings 27, 29, 31, 33 left by the tabs, using the tabs as cushioning protection on the glass edges, and pulled tight to releasably secure the windshield to the interliner. The restraining band preferred is a commercially available metal strap equipped with the securing clips 50. These bands 48 are wrapped about the opposite side of the corrugated paperboard blank 36 and the ends are brought forward through the openings created when the tabs 28, 30, 32 and 34 are folded from the blank surface. The ends are then drawn tightly together and secured by clips 50. As an alternative an Avistrap may be used to restrain the windshield to the interliner. The Avistrap is made from a nylon like material and is also commercially available.

Once the windshield or other frangible article is secured to the interliner 26, it is then necessary to fold the blank along its scored lines 44, 46 to form the hereinbefore mentioned I-shape configuration so that the entire unit may be inserted in the shipping container provided therefor. It is preferred to turn the interliner up onto one of its wing walls to bring the windshield into a vertical position before inserting the assembly into the container 10. That is, when the windshield or frangible article is being mounted on the interliner element 26, it has been found more convenient to lay the windshield horizontally on the interliner blank, but during shipping or storage, greater strength and stability is afforded when the inter-

liner is turned up so that the windshield is in a vertical position in the container.

The tab members 28, 30, 32 and 34, die-cut from the interliner element 26, have a plurality of fold lines at the point where they are bent away from the interliner element which provides the capability whereby different sizes of windshields may be shipped. The package is capable of carrying only one windshield or frangible member but because the package has a single corrugated board interliner the net result is a compact and lightweight package. It is also preferable to equip the shipping container with two hand holes (not shown) on each side panel for ease of handling in shipment and customer use.

FIGURE 2 shows more clearly the hereinbefore mentioned I-shape of the interliner member 26 and illustrates the snug fit that the packing unit assumes when inserted in the container 10. Because the peripheral tab elements 28, 30, 32, 34 are positioned to engage the central area of the curved windshield or frangible article, the interliner member does not have to be curved to a great extent. FIGURE 2 shows the central portion of the I-shaped interliner member 26 as being slightly curved out toward the back wall 18 of container 10. The curvature of the packing unit itself occurs because the windshield is partially curved in its central portion and is forcing the member 26 to be curved. Of course this slight curvature is permitted because of the cut-out portions along lines 40 which reduce the size of the interliner member 26 in that central area when the packing unit is assembled.

In stacking, as would be particularly experienced during shipping or storage, containers of the present design should satisfactorily support several times their own weight. Under actual laboratory tests of extreme handling, such as by bumping and dropping which might be occasioned by inexperienced or careless labor, the container embodied in the present invention withstood breakage and the contained windshield suffered no damage. Accordingly, it is apparent that the novel interliner member is well adapted, while flat, for convenient prestorage, for easy and rapid accessibility during the packaging and lastly provides a strong support for frangible articles despite the simplicity of its assembly.

The shipping container preferred for housing the assembled packing unit may be of either a full flap or part flap overlap design. The configuration shown in FIGURE 2 is a full flap overlap and is of course, most de-

sirable where the containers will receive the worst handling and shipping treatment. The die cut and scored interliner member packing unit is preferably of double wall corrugated paperboard construction and comprises only a single unit.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred embodiment of the same, but that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention.

We claim:

- 1. A shipping and storage package for a frangible article comprising in combination;
  - (a) a shipping container having top, bottom, front, rear and end walls; and,
  - (b) a one-piece interliner packing unit adapted to be inserted into said shipping container to form a structural part thereof and to releasably locate and hold a frangible article thereon in spaced relation to said shipping container walls, said interliner being cut and scored, forming an I-shaped configuration including a main portion with upper and lower wing walls at the edges thereof being cut and scored to extend on both sides of said main portion when erected, and having peripherally spaced confining elements which are held in edge encompassing relation at the periphery of said frangible article by restraining means.
- 2. The shipping and storage package of claim 1 wherein;
  - (1) said peripherally spaced confining elements comprise tab means die-cut from the main portion of said interliner, and said restraining means comprises a wrap around band running behind the interliner and threaded through the openings formed by the die-cut tab means.

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