United States Patent

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[54] **PACKAGE FOR LARGE GLASS PANELS**
5 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** ..... **206/62 R,** 217/36 R, 220/4 E, 229/23 C
[51] **Int. Cl.** **B65d 85/46**
[50] **Field of Search** ..... 52/610; 206/60, 60 A, 62, 65 B, 46 FN, 46 FR, 46, 46 LM, 46 M; 214/10.5; 217/36, 43; 220/4; 229/23 C; 249/48–50

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ABSTRACT: A glass panel shipping and storing container having two similar separate halves, each half formed by spaced L-shaped frame members secured to and held in spaced parallel relation by stiff sheet corrugated cardboard longer than said panels. Each frame member is formed of two legs rigidly joined at one end and formed of spaced boards arranged on edge with respect to said cardboard and intermeshing with an rigidly secured to the boards of the other leg at the joint. The boards of the frame members of one half intermesh with the boards of the corresponding frame members of the other half and are removably secured thereto in the assembled container and form a frame extending entirely around the container. The protruding ends of the cardboard sheets are folded down across the ends of the glass slabs and are secured as by taping to close the package.

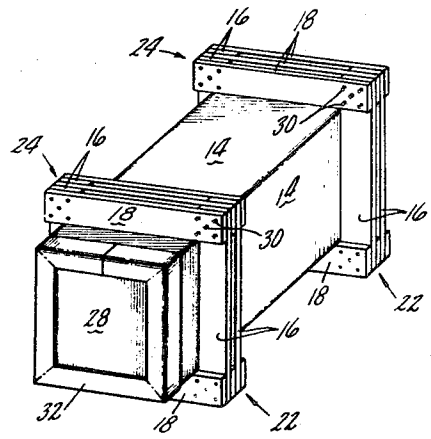


FIG. 1

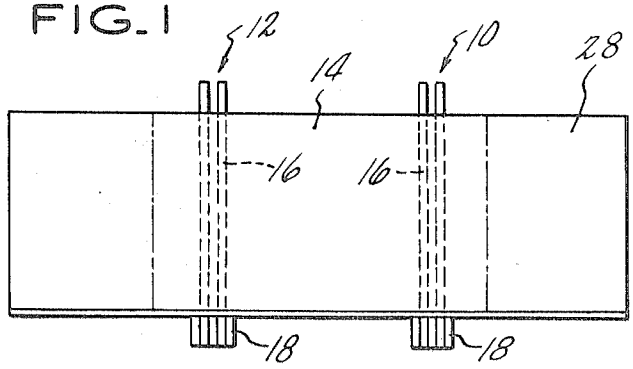


FIG. 2

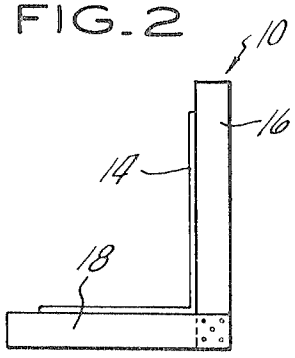


FIG. 6

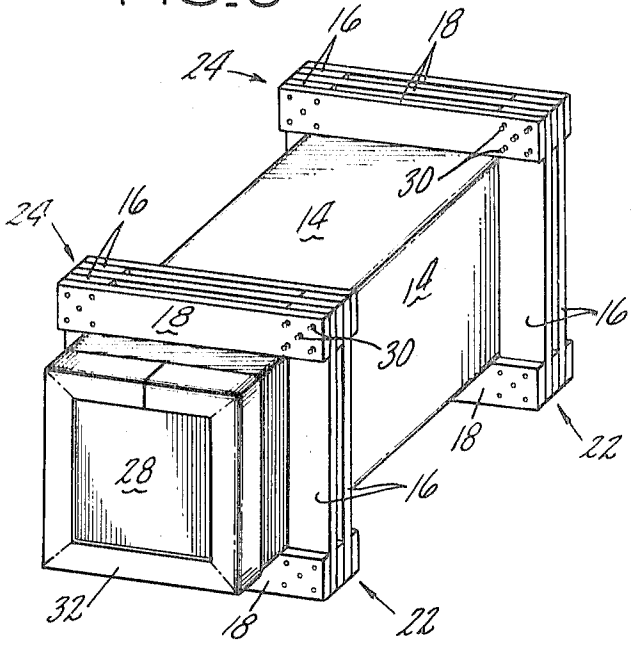


FIG. 3

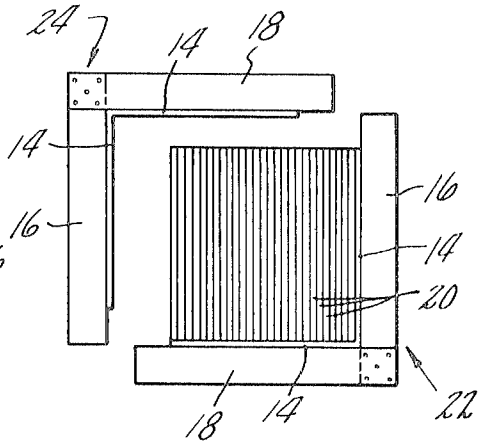


FIG. 4

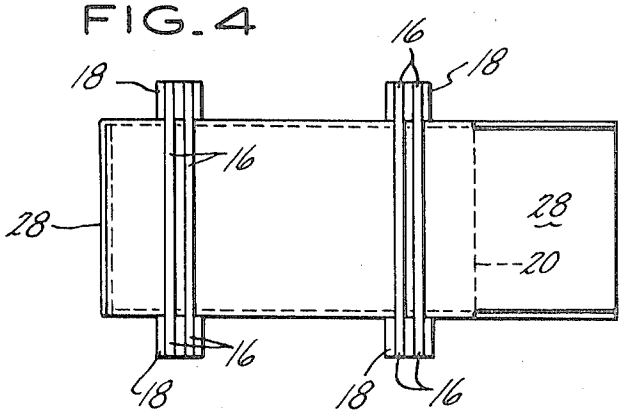
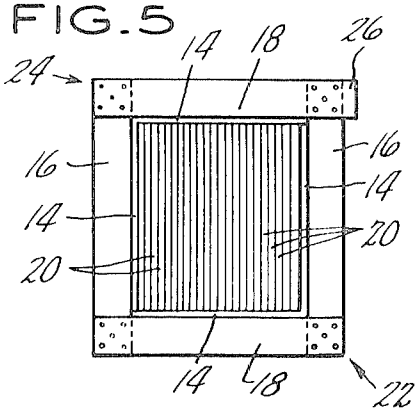


FIG. 5



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PACKAGE FOR LARGE GLASS PANELS

BACKGROUND OF THE INVENTION

Glass panels are presently packaged, shipped and stored in bulky wooden boxes with wood panels on all four sides and both ends and banded together with steel bands surrounding the package. This package requires a large amount of material which cannot be readily reused in reshipping panels after an intermediate treatment and do not readily accommodate a small number or a different size of panel. The bulky boxes present a major problem in disposing of the waste material of the boxes after the panels have reached their final destination.

Applicant's package is lighter, uses much less material, provides a package that is easily stacked, can accommodate different sizes and quantities of glass panels, is more economical both in material and in labor in forming the package and has waste material that is less bulky and less expensive to dispose of when the container has served its purpose.

SUMMARY OF INVENTION

This invention relates to a method of packaging and the resulting package in which two separate halves are separately formed and assembled around the material to be packaged in such a manner that one half may be readily removed to expose the contents of the package. A pair of L-shaped frame members are secured, preferably by adhesive, in spaced relation to sheet packing material such as corrugated cardboard to form one half of the container. The L-shaped frames are formed of spaced bars intermeshing and rigidly secured to each other at one end. Similar L-shaped frame members with attached cardboard sheets have their free ends intermeshing with the free ends of the other set of L-shaped frame members and the free ends are removably secured together to provide a pair of frame members extending entirely around the package. The protruding ends of the cardboard sheets are bent down over the ends of the package material and secured in position as by cementing, stapling or preferably by taping in position.

An object of the invention is to provide an inexpensive reusable package particularly for large glass panels such as shower bath enclosure doors.

A further object is a reusable package which may accommodate different sizes and quantities of glass panels or articles to be packaged.

A further object is an improved container which will form an inexpensive package which will adequately protect the packaged glass panels during shipment, handling and storage and present a minimum of waste material when the package is to be disposed of after having served its purpose.

This container is of particular advantage where glass panels are manufactured in one location and shipped to another location for treatment where some of the panels may be damaged and then again shipped, after the treatment to another location for further operations on the panels or for sale. The same package may be used and reused in several shipments and will readily accommodate the different number of panels occasioned by loss or damage of some panels during manufacturing operations.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view in elevation of one half of the container with the frame and sheet packing material assembled.

FIG. 2 is an end view of FIG. 1.

FIG. 3 is an end view similar to FIG. 2 showing slab material stacked in one half of the container and the other half in position to be applied over the stacked slab material.

FIG. 4 is an elevation of the partially completed container with the protruding ends of the sheet material at one end folded over the ends of the container contents and secured by tape.

FIG. 5 is an end view of the partially completed package.

FIG. 6 is a perspective view of the completed package.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The container which is utilized to form the completed package embodying the invention of this application comprises two similar separate halves which are assembled to form a tubular container having a pair of supporting frames extending completely around the tubular container. As shown in FIGS. 1 and 2 each half comprises a pair of spaced parallel L-shaped frame members 10 and 12 secured in spaced relation to sheet packing material 14, preferably corrugated cardboard. Each frame member has vertical leg 16 and a horizontal leg 18. Each leg is made up of spaced bars, preferably boards, secured on edge to the packing material 14. One end of the bars of one leg are intermeshed with, and permanently secured in any suitable manner as by cementing and/or nailing to one end of the bars of the other leg, substantially at right angles thereto form the L-shaped frame member. The packing material may be secured to the edges of the boards forming the frame members in any suitable manner, preferably by cementing. The packing material 14 may be separate sheets of corrugated cardboard but is preferably a single sheet bent into an L shape.

As shown in FIG. 3 the material to be packed which in the specific example shown may be glass panels 20 such as would be suitable for shower bath doors is stacked in one container half 22. The other container half 24 which is substantially identical to container half 22 is assembled onto the stacked panels 20 and the boards 18 of one leg of the frame members 10 and 12 are intermeshed with the boards 16 of the corresponding frame member of the other half. Pressure is applied vertically and horizontally to the frame members 16 and 18 of the second half 24 to compact the stacked panels 20 and while under pressure the intermeshed free ends of the legs 16 and 18 are removably secured together as by nailing with double-headed nails 30. If the material to be packaged produces a smaller bundle than that for which the frames were originally intended the ends of the frames will protrude as shown at 26 in FIG. 5 and if desired these ends may be readily sawed off to provide a flat exterior surface on the frame suitable for stacking completed packages. Any excess cardboard may be trimmed with a suitable knife using the edge of the glass panel stack 20 as a guide.

After the frames have been secured in position, the ends of the cardboard sheets, which extend out beyond the end of the stacked glass panels, are folded over the ends of the glass panel to close the end of the package. The ends of the sheet covering the top of the package may first be folded down and then the ends of the sheet covering the bottom of the package may be folded up over the already downturned end and secured in position as by taping or stapling or any other suitable means. The ends of the two side panels are then folded in over the already folded upper and lower ends and are secured to themselves and/or the now-closed package by any suitable means, taping 32 being the now preferred method. The package is now complete and may be readily moved or stacked by a fork lift. The cardboard provides sufficient protection for the glass panels so that no additional protection such as padding for the forks of the fork lift will be required.

The closed ends of the package will prevent longitudinal shifting of the glass panels in the package. The stiff and rigidly secured L-shaped frame members which are usually made of 1 inch by 4 inch boards and the attachment of the cardboard sheets to the frame members will prevent transverse shifting or skewing of the stack of panels in the package.

In utilizing this invention the L-shaped frame members 10 and 12 are first formed by overlapping one end of the boards forming the two legs of the L and alternating the boards of the two legs so as to hold the boards of each respective leg in spaced relation. The legs are arranged at substantially right angles and the overlapped ends are rigidly secured together as by nailing and/or cementing. The legs are arranged in spaced parallel relation with one leg horizontal and the other leg ex-

tending vertically. In general the horizontal leg **18** may comprise three 1 inch by 4 inch boards and the vertical leg **16** may comprise two 1 inch by 4 inch boards with the ends of the vertical boards located between the ends of the horizontal boards. The size and the number of the boards may of course be increased or decreased as desired to suit particular requirements. With the frame members **22** so spaced, a sheet of corrugated cardboard **14** longer than the material to be packaged is bent into an L shape to conform to the L shape of the frame members **16** and **18** and placed in position against the edges of the boards of both legs of the frame members **22** and secured thereto in any suitable manner, preferably by the aid of an adhesive. The glass panels **20** as manufactured in the glass-making plant may then be stacked on edge on the cardboard over the horizontal legs **18** and with the faces of the panel leaning against the cardboard **14** over the vertical legs **16**. A second piece of cardboard **14** bent into an L shape and having a length greater than the length of the glass panels **20** is then placed over the two exposed side surfaces of the stacked panels. A pair of prefabricated L-shaped frame members **24** similar to those described above are placed over the cardboard covering the stacked panels **20** and the ends of the boards of this frame member are intermeshed with the free ends of the corresponding frame members **22** supporting the stacked panels and extending above and in front of the stacked panels. This frame member **24** is secured to this second sheet of cardboard preferably by adhesive. Pressure is applied horizontally and vertically inward to the frame member **24** and while under pressure the free ends of the intermeshing frame members **22** and **24** are removably secured as by nailing with double headed nails **30**. The free ends of the cardboard extending beyond the ends of the stacked glass panels may be slitted with a knife to provide separate flaps which may then be folded down over the ends of the stacked glass panels and secured as by tape **32** to complete the package.

After the package has been received at a glass treatment or tempering location the package may be opened by slitting the tape closing the ends of the package and removing the removable fastenings in the diagonally opposite corners of the overlapping frame **22, 24**. The top pair of spaced frames **24** together with the attached cardboard sheet **14** may be then removed exposing the stacked glass panels. The panels may then be removed and heat treated or tempered or otherwise processed and then stacked in what was previously the top half of the container. After all the glass panels have been treated the container may be closed in the manner described above utilizing what was previously the bottom half of the container as the now top half of the container. If some of the panels have been damaged in treatment so that there are a smaller number than were originally packaged the excess cardboard may be trimmed off with a knife. The horizontal top and bottom members **18** will now be found to protrude as at **26** beyond the vertical legs **16** of the corresponding frame members with which they intermesh and these protruding ends may be sawed off flush with the leg **16**. The ends of the container may be closed to form the package as described above and the same container thus reused for reshipping the treated panels for further manufacturing operations or to the warehouse or merchandiser.

While I have illustrated and described a preferred embodiment of my invention it is to be understood that such is merely illustrative and not restrictive and that the variations and modifications may be made therein without departing from the spirit and scope of the invention defined in the attached claims.

What I claim is:

1. A container element for forming one half of a container formed of two similar halves comprising, a pair of spaced parallel L-shaped frame members, each member having two legs joined at one end and extending substantially at right angles to each other, each leg formed of spaced parallel boards with the spaced boards of one leg intermeshed with, spacing and rigidly secured to, the boards of the other leg at the juncture of the legs, sheet packing material comprising a single sheet of laminated corrugated cardboard shaped to fit the L shape of said frame members, extending across and secured to the edges of said boards, said spaced boards of said members arranged on edge on, extending transversely across, positioned intermediate the ends of and secured to, said sheet packing material.

2. A container comprising a pair of spaced frames extending entirely around the container, each frame comprising two L-shaped members each having two legs normal to each other, each leg comprising spaced parallel bars positioned on edge and permanently and rigidly secured at one end to the bars of the other leg, a sheet of stiff, protective and strengthening packing material connecting corresponding spaced members of the pair of spaced frames, said material extending across, and permanently secured to, the inner surface of the legs of said spaced members, the bars at the extremities of the legs of one of the L-shaped members of each frame removably secured to the bars at the extremities of the other member of the frame, portions of the end of said sheet material outboard of said frames directed inwardly in overlapped relation with other end portions and fastened in position to close the end of the container.

3. A container comprising a pair of spaced frames extending entirely around the container, each frame comprising two L-shaped members each having two legs normal to each other, each leg comprising spaced parallel boards positioned on edge, extending between, spacing and permanently and rigidly secured at one end to, the boards of the other leg, a sheet of stiff, protective and strengthening packing material of laminated corrugated cardboard connecting corresponding spaced members of the pair of spaced frames, said material extending across, and permanently secured to, the inner surface of the legs of said spaced members, the boards at the extremities of the legs of one of the L-shaped members of each frame removably secured to the boards at the extremities of the other member of the frame.

4. A package suitable for stacking, shipping and handling comprising a first pair of spaced apart laminated rigid L-shaped members each having two legs extending at substantially right angles, each leg formed of spaced parallel bars with their edges exposed said bars of each leg intermeshing at one end with, by extending between and spacing, the bars of the adjacent leg and permanently and rigidly secured thereto at said end, a sheet of stiff protective and strengthening packing material connecting said members by extending across and permanently secured to the exposed inner edges of said bars, a stack of glass panels shorter than said sheet material and arranged on edge, one of said legs extending horizontally under the edges of, and supporting, said stack of panels, the other leg extending vertically parallel to one face of said stack, a second similar pair of spaced L-shaped members including said sheet material, each having one leg extending horizontally over said stack and having the other leg parallel to the other face of said stack and having the bars at the terminal ends of each leg intermeshed with and extending between the bars of a mating leg of a corresponding one of said first pair of L-shaped members and removably secured thereto to form a rigid removable band extending around said stack and holding it assembled, end portions of said sheet material beyond said stack extending inward across the ends of said stack and fastened in position and closing the end of the package.

5. A package suitable for shipping and handling fragile panels comprising a stack of glass panels, a covering of stiff protective and strengthening sheet packing material covering two sides of said stack and a pair of rigid spaced L-shaped members of spaced parallel boards rigidly secured at their junction and secured to said sheet material and extending entirely across said two sides, a second covering of stiff protective and strengthening sheet packing material covering the other two sides of said stack and separable from said first-mentioned sheet material and a second corresponding pair of

rigid spaced L-shaped members of spaced parallel boards rigidly secured together at their junction and secured to said second covering and extending entirely across the other sides

of said stack with the free ends of corresponding pairs of members intermeshing and removably secured together, said sheet packing material covering the ends of said package.