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CONTAINER END WALL HANDHOLE REINFORCEMENT

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FIG. 1.

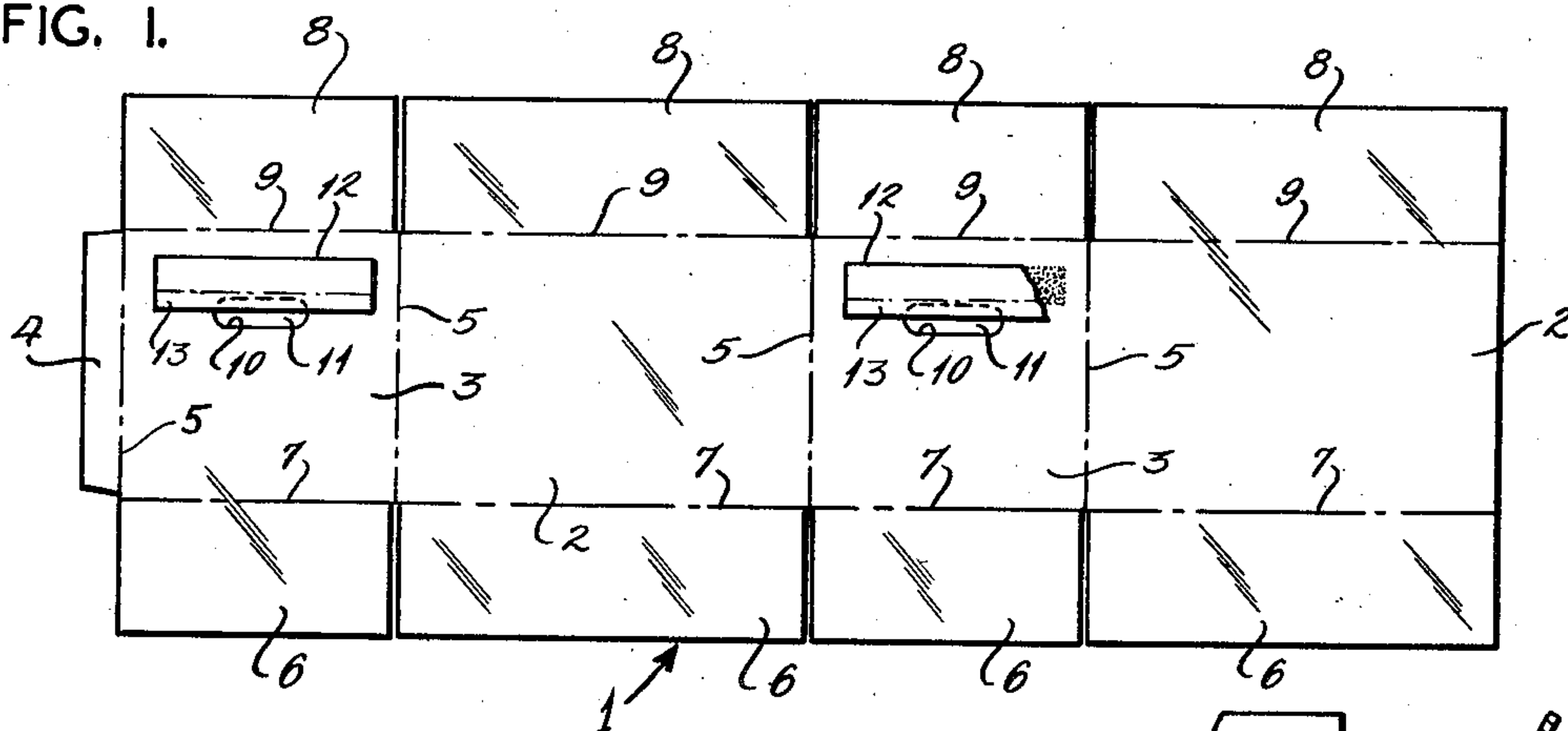


FIG. 2.

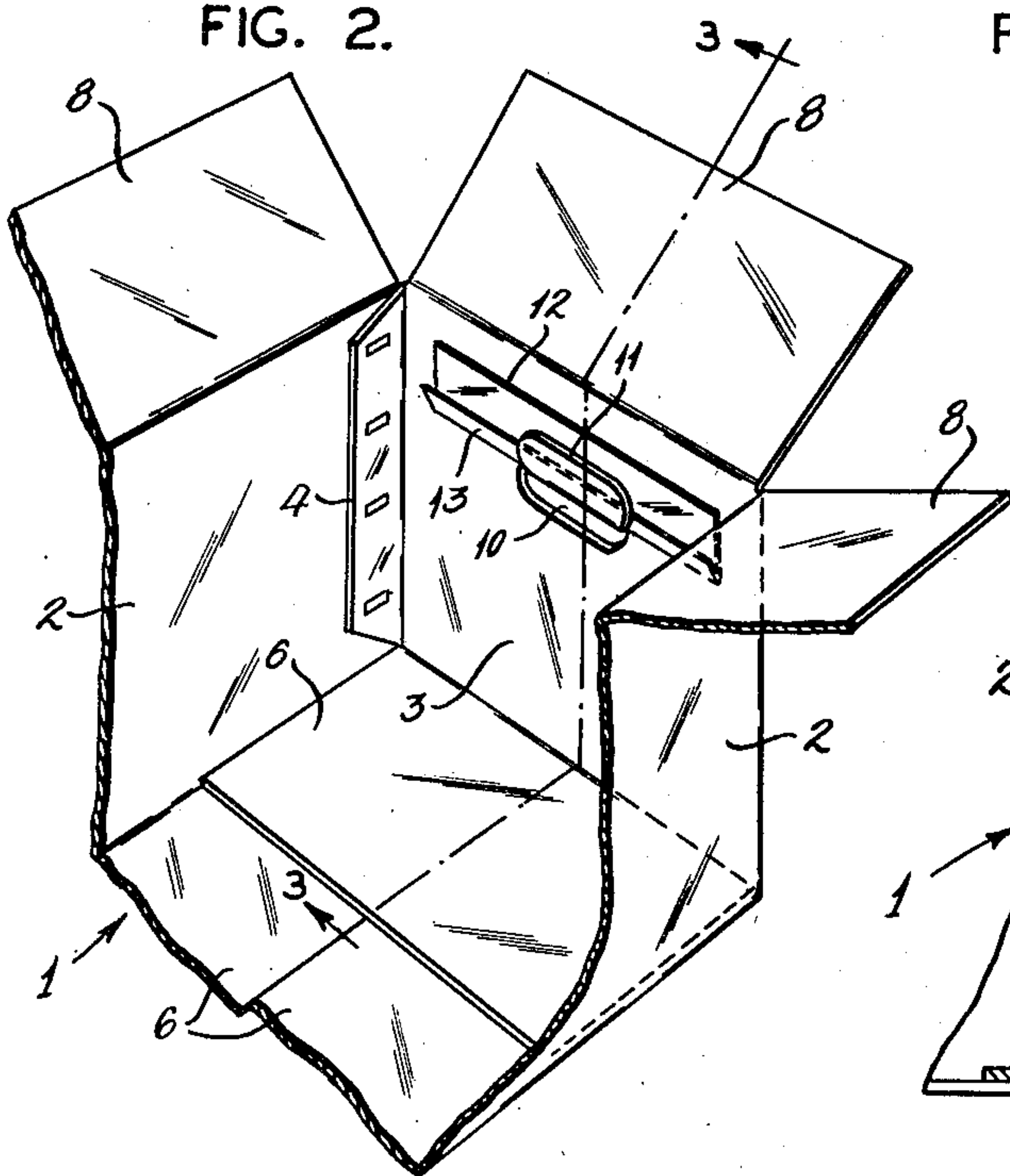
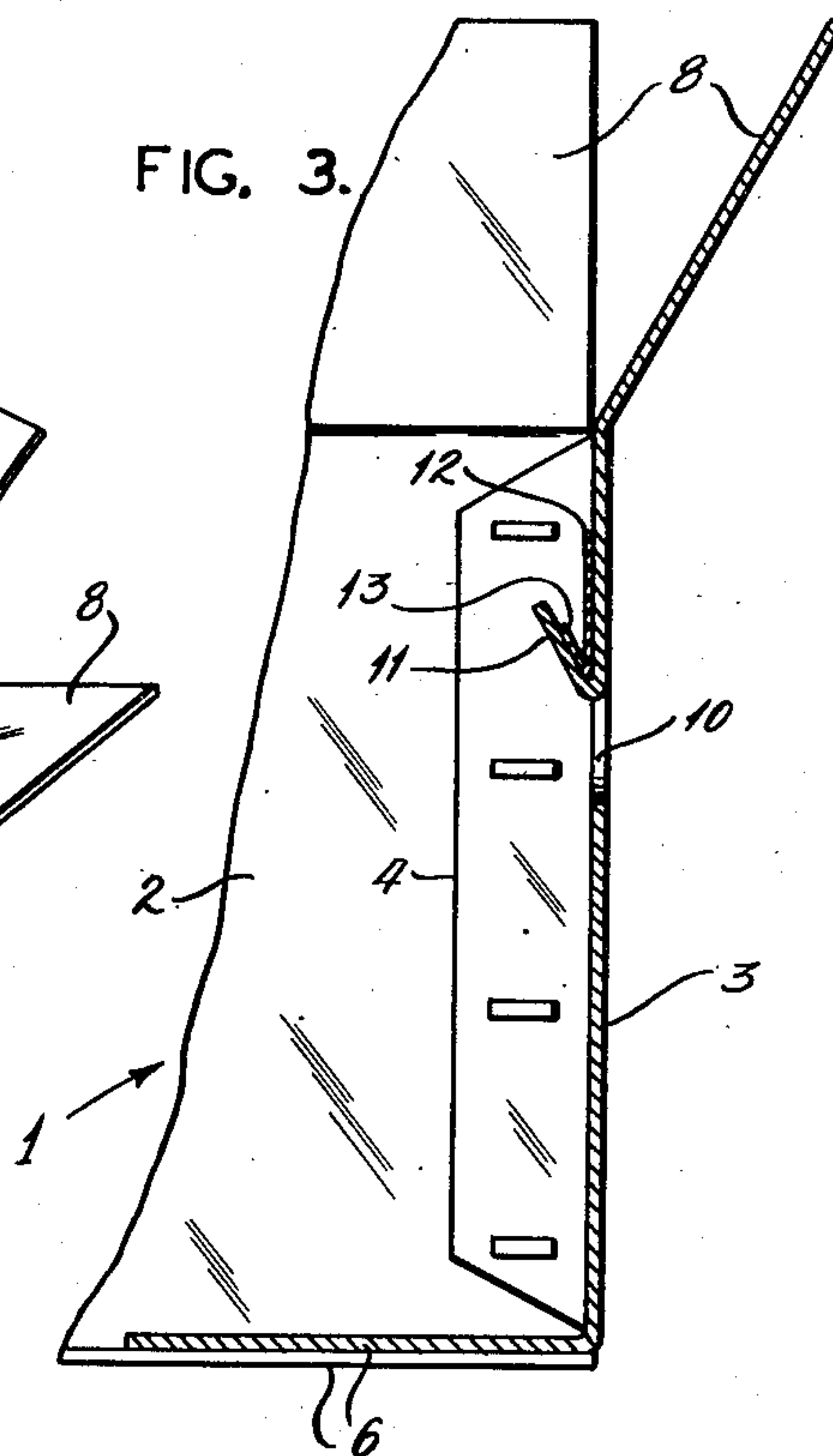


FIG. 3.



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CONTAINER END WALL HANDHOLE REINFORCEMENT

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4 Claims. (Cl. 229—52)

This invention relates to containers, carriers and other receptacles made of fibreboard or other bendable material, having a carrying means, such as a handhole, in one or more walls thereof.

Various means have heretofore been proposed for strengthening the end walls of a container and other receptacles above the handholes for improving the rigidity thereof and to increase the resistance of the raw edges of the handhole to tearing when the loaded container is carried by one of the handholes. Some of these devices have had a degree of success, but their use generally involves more or less complicated constructions, employing costly additional amounts of relatively heavy caliper, expensive board. For said classes of containers, such as, for example, a 24 twelve ounce single trip beverage shipping case, even a moderate additional expense may prove prohibitive from a practical standpoint.

The end walls of the containers of the general class described are usually constructed of single-ply corrugated board. When the loaded container is carried by grasping one end by the handhole, as is the usual practice, the entire weight of the load is directed to the raw edge of the single-ply board at the handhole, frequently resulting in failure of the upper portion of the end wall structure.

Proceeding largely in the opposite direction from most of the prior proposals with respect to material consumed and fabrication and assembly costs, this construction completely eliminates the described problem with extreme economy by a novel application of a relatively small strip of light caliper, inexpensive fibreboard to the inner face of the end wall of the container.

One of the principal objects of the invention is to provide a simple, inexpensive, easily applied reinforcement to the handhole portion of the end wall of a receptacle, whereby the handhole is substantially proof against failure when the loaded receptacle is carried by one handhole.

Another object is to provide a reinforcement to the upper portion of an end wall for a container or other receptacle having a handhole in its upper portion, comprising a longitudinal fibreboard strip attached to the inner face of the end wall above the handhole with a free longitudinal margin on the lower portion thereof folded inwardly and upwardly and enclosed by a flap hinged to the upper edge of the handhole.

Still another object is to provide a broad, smooth surface at the upper edge of a handhole for a container for gripping, handling and carrying the container without injury to the hand.

The invention is embodied in an improved end wall of a container of a type having a handhole with a flap hinged to the upper edge thereof, and having a reinforcing strip of fibreboard or other suitable material of greater length than the handhole attached to the inner face of the end wall immediately above the handhole, with a free, lower longitudinal inwardly foldable margin overlapping a portion of the handhole prior to folding.

The invention also consists in the parts, elements and

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combination of parts hereinafter described and claimed. In the accompanying drawings which form part of this specification and wherein like numerals refer to like parts wherever they occur:

Fig. 1 is a plan view of the inner face of a blank forming a one-piece shipping container illustrating the reinforcing strip attached to the end walls,

Fig. 2 is a fragmentary perspective view of the inside of an assembled container with the reinforcing strip attached and shown in its upwardly folded position,

Fig. 3 is a vertical cross sectional view of the assembled container along line 3—3 of Fig. 2.

Referring now to the drawings in detail, it will be seen that the preferred embodiment of the invention has been illustrated in a container 1 having side walls 2, end walls 3 marked off by score lines 5, and a fastening strip 4 marked off by score lines 5. At the bottom of each side and end wall 2 and 3 are bottom members 6 marked off by score lines 7. At the top of each side and end wall 2 and 3 are cover members 8 marked off by score lines 9.

Each of the end walls 3 has a handhole 10 in the upper portion thereof, with a handhole flap 11 hinged to the upper edge of said handhole 10. A reinforcing strip 12 is glued to the inner face of each end wall 3, or attached thereto by other suitable means, across the entire length of said handhole 10 and down to a horizontal line in register with the upper edge of the handhole 10. The lower margin 13 of the reinforcing strip 12, which extends over the upper portion of the handhole 10, is not glued or otherwise attached to the end wall 3, and is thus adapted to be readily folded inwardly and upwardly throughout its entire width on the inner face of the end wall 3.

Containers of the class described are usually shipped to the users in collapsed form as illustrated in Fig. 1, wherein the free lower margin 13 of the reinforcing strip 12 extends over a portion of the handhole 10 with a hinged handhole flap 11 in flatwise relation thereto.

Fig. 3 is a vertical cross sectional view of the assembled container along line 3—3 of Fig. 2, illustrating the position of the cooperating parts of the reinforcement. The free lower marginal edge 13 of reinforcing strip 12 is bent inwardly and upwardly at an acute angle by the hinged handhole flap 11 along the lower edge of the glue line which is in register with the upper edge of the handhole 10. The gripping area or upper edge of the handhole 10 thus comprises a smooth, rounded, four-ply thickness of board which provides a comfortable solid hand grip.

The reinforcing strip 12 may be of rectangular shape and is positioned longitudinally above the upper edge of the handhole 10 and extends beyond the ends thereof. The reinforcing strip 12 is attached to the inner face of the end wall 3 by an adhesive, or other suitable means, with a free, unattached lower margin 13 along its lower edge overlapping about one-half of the height of the handhole 10. The overlapping unattached portion of the strip automatically folds inwardly and upwardly along a line parallel with the upper edge of the handhole 10 when the hand is inserted therein for lifting the container, thereby forming a folded longitudinal edge or rib in fixed alignment with the upper edge of the handhole. This folded edge not only arrests any tendency of the handhole to tear under load, but also serves as a strengthening rib across the upper portion of the end wall and provides increased resistance to endwise deflection thereof.

Preferably, the opening for the hand grip is slit on the ends and lower edge only, thus providing an integral hinged flap 11 on the upper edge of the handhole 10 which automatically folds inwardly when the con-

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tainer is grasped, enclosing the free margin of the reinforcing strip inwardly and upwardly. This construction provides a four-ply thickness of board at the point of maximum stress when the loaded container is carried in one hand. Any tendency of the end wall 3 to tear at the extremities of the handhole 10 under load is effectually prevented by the folded edge of the reinforcing strip 12 attached to the inner face of the wall 3.

It has been found that entirely satisfactory performance of the reinforcement means may be attained with the use of a solid fibreboard strip of sixteen point caliper or less, thus reducing the expense of the device to a negligible factor while completely eliminating an inherent weakness of the end walls of containers of the class described.

If desired, the inward folding of the free margin of the reinforcing strip 12 may be facilitated by a light score along the lower edge of the glue line in register with the upper edge of the handhole. This is ordinarily unnecessary since the relatively light caliper of the reinforcing strip 12 readily lends itself to folding within the hinge handhole flap 11 as the latter is directed inwardly and upwardly in the course of carrying the container.

This invention is applicable to a wide variety of receptacles of a class provided with handholes for lifting purposes. It is especially useful wherein the stress concentrated on the handhole by the lading in lifting and carrying the package approaches or exceeds the strength and tear resistance of the paperboard at the point of stress.

A single example of the invention is herein presented and described, but it is submitted that the embodiment presented is illustrative only and not restrictive and it is also submitted that the invention is susceptible of incorporation in other modified forms falling equally within the scope of the claims herein presented.

What I claim is:

1. An end wall for a container having a handhole therein, and a reinforcing strip of greater length than said handhole, the upper longitudinal portion of said strip being secured to the inner face of said wall above said handhole from the upper longitudinal edge of the strip downwardly to a horizontal line parallel to and in registry with the upper boundary of said handhole, the lower longitudinal portion of said strip being unsecured and extending over approximately the upper half of said

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handhole and adapted to be folded inwardly and upwardly along said horizontal boundary line of the handhole in the carrying position of said container to form a V-shaped channel member reinforcing the upper boundary of said handhole and the adjacent portion of said end wall above said handhole.

2. The combination set forth in claim 1 wherein the upper portion of said reinforcing strip is attached to said end wall by an adhesive, said adhesive extending throughout the length of said strip to a horizontal line parallel to and in register with the upper edge of said handhole.

3. The combination set forth in claim 1 wherein said reinforcing strip is scored longitudinally along a line parallel to and in registry with the upper boundary of said handhole.

4. An end wall for a container having a handhole therein, a flap hinged to the upper boundary of said handhole adapted to fold inwardly and upwardly in the carrying position of said container and a substantially rectangular reinforcing strip of greater length than said handhole, the upper longitudinal portion of said strip being secured to the inner face of said end wall above the handhole downwardly to a horizontal line parallel to and in registry with the upper boundary of said handhole, the lower longitudinal portion of said strip being unsecured and extending over the upper portion of said handhole and being adapted, in the carrying position of said container to fold inwardly and upwardly and form a longitudinal V-shaped channel member extending from end to end across the inner face of said end wall with its central portion firmly enclosed by the inwardly and upwardly folded handhole flap.

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