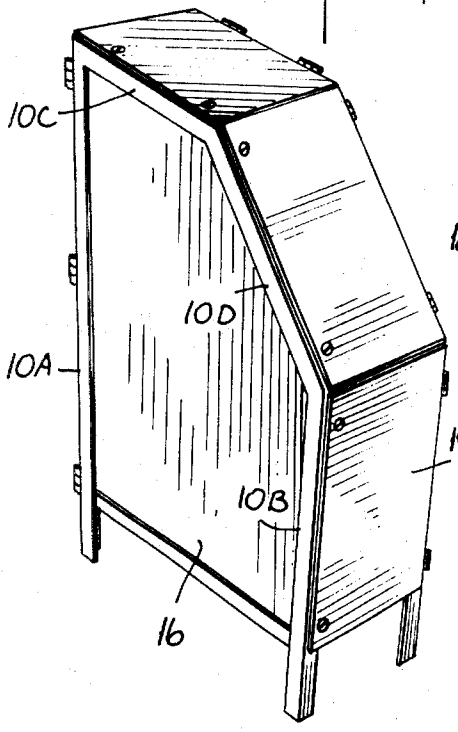
Sept. 8, 1970 H. E. CIPOLLA 3,527,340

COLLAPSIBLE CONTOURED CONTAINER

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Fig. 1.



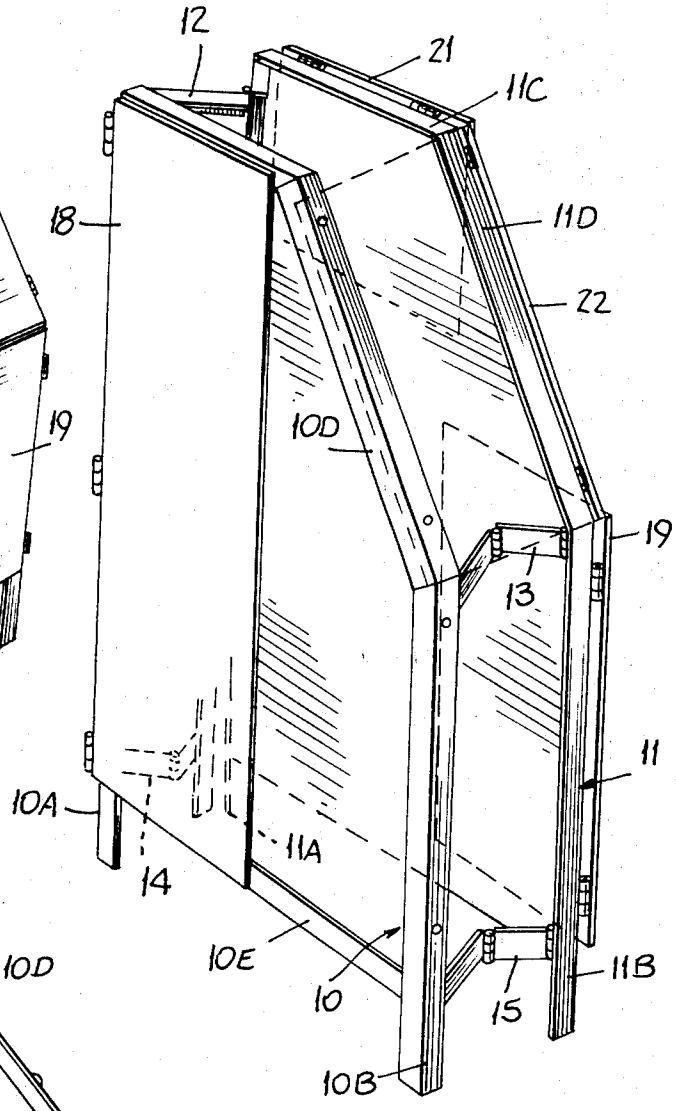


Fig. 3.

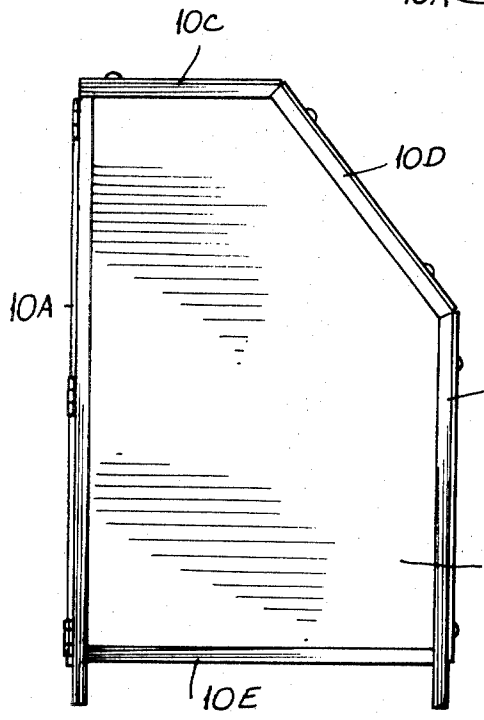


Fig. 2.

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Fig 4

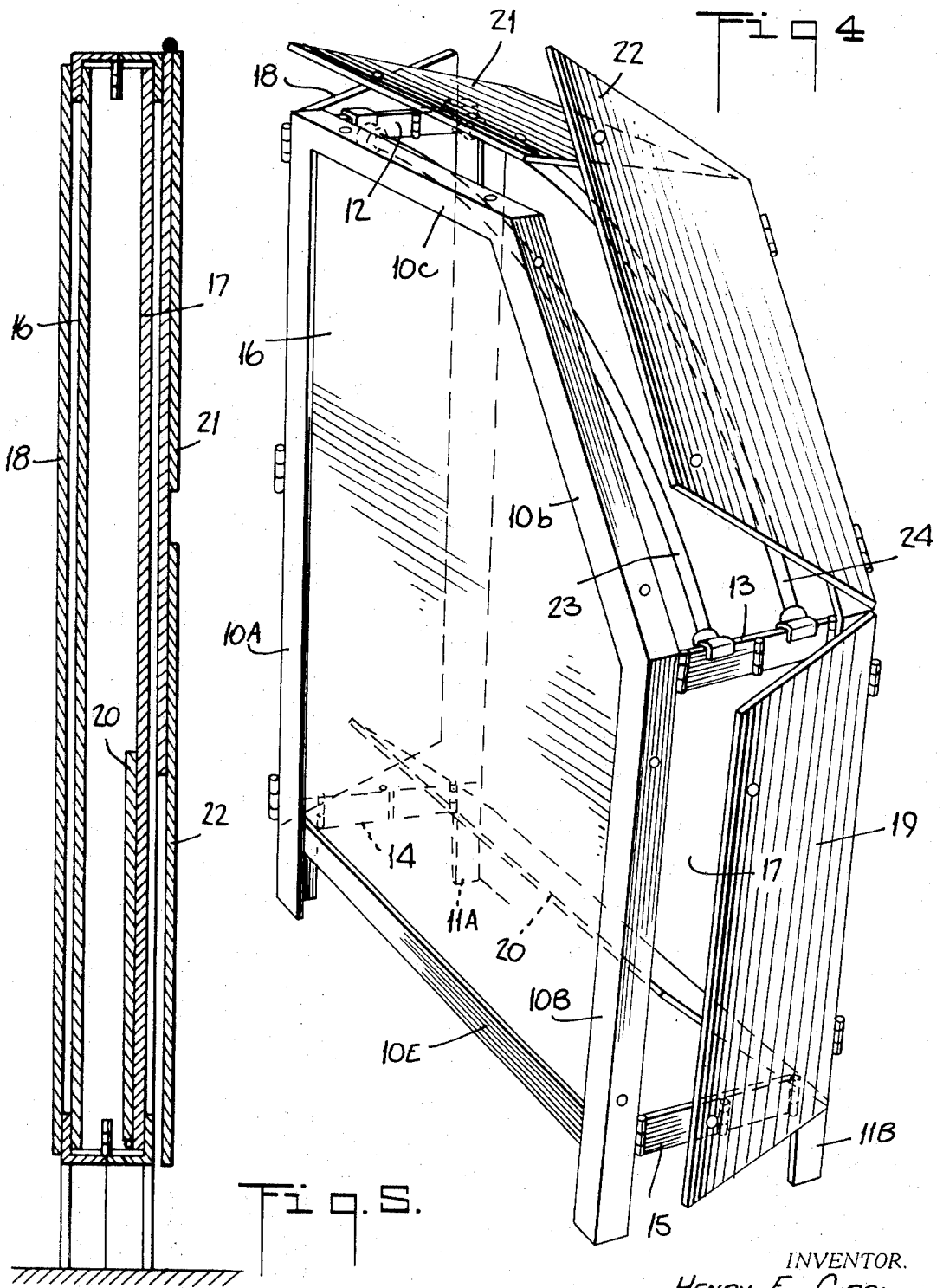


Fig. 5.

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3,527,340

COLLAPSIBLE CONTOURED CONTAINER

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Continuation-in-part of application Ser. No. 783,341, Dec. 12, 1968. This application Feb. 26, 1969, Ser. No. 802,489
Int. Cl. B65d 7/26, 9/14, 85/18
U.S. Cl. 206—7 5 Claims

ABSTRACT OF THE DISCLOSURE

A collapsible contoured container for shipping garments and the like in a cargo plane igloo, the container when empty, being capable of being reduced to a compact structure which may be transported at low cost. The container is constituted by a framework formed by identical contoured front and rear frames whose corners are interconnected by foldable cross beams. Panels are mounted on the front and rear frames, while hinged thereto are floor, roof and end wall panels which are adapted to fold against the front and rear wall panels when the container is collapsed.

RELATED APPLICATION

This application is a continuation-in-part of my copending application Ser. No. 783,341 filed Dec. 12, 1968, entitled "Collapsible Freight Container."

This invention relates generally to containers for shipping goods, and more particularly to a contoured, collapsible container especially adapted to transport articles of apparel in a cargo plane igloo.

In shipping garments, attempts have been made to use large, box-like containers whose dimensions are sufficient to accommodate hundreds of garments on hanger bars mounted within the container. While such conteiners are strongly built and serve as an efficient means for shipping garments from a manufacturer to a customer, in order to reuse the container, it must be shipped back empty to the manufacturer, and this presents a serious practical problem.

In formulas for determining freight charges, both the volume and weight of the loaded container are taken into account. Hence even though a container may be lightly loaded or even empty, the shipping charge therefor is still quite substantial, for its volume is as great as a fully loaded container. This factor has heretofore discouraged the use of large shipping containers for clothing which are returned empty.

In my copending application, there is disclosed a collapsible container of box-like construction suitable for transporting goods on trailer trucks and other standard carriers whereby the empty container may be returned in the collapsed state, thereby effecting substantial savings in shipping costs. Such collapsible containers are not, however, usable for shipping by cargo plane for in this instance the container must be contoured to fit into an "igloo" which is the name given to the contoured shipping compartment whose form is accommodated to the profile of the fuselage.

Accordingly, it is the main object of this invention to provide a collapsible, contoured container of large volume which is suitable for efficiently transporting large quantities of clothing in a cargo plane, and which may be quickly collapsed, when empty, into a relatively compact structure capable of being shipped back at relatively low cost.

Also, an object of the invention is to provide a collapsible, contoured shipping container which may be densely packed with clothing to avoid vacant areas therein that add to shipping costs.

Briefly stated, these objects are accomplished in a collapsible container structure constituted by a framework having identical front and rear contoured frames whose corners are interconnected by foldable cross beams, whereby the two frames may be brought together. Front and rear wall panels are fixedly supported on the rear and front frames. Hinged to the frames are floor, roof and end wall panels which are adapted to fold against the front and rear panels when the container is collapsed.

For a better understanding of the invention, as well as other objects and further features thereof, reference is made to the following detailed description to be read in conjunction with the accompanying drawing wherein:

FIG. 1 is a perspective view of a contoured container in accordance with the invention in the erected state;

FIG. 2 is a front elevation of the container;

FIG. 3 illustrates, in perspective, various panels of the container in their hinged relation to the framework, the panels being folded to permit collapse of the container;

FIG. 4 shows the manner in which the hinged panels of the container are put in place when the container is erected, and

FIG. 5 shows the container in the collapsed state.

Referring now to FIG. 1, there is shown a collapsible, contoured container in accordance with the invention. While the container is especially adapted for shipping clothing, it will be appreciated that it is suitable as a contoured container adapted for use in cargo planes for shipping all types of goods in those situations where the container is to be returned empty for reloading at a point of origin.

The contoured container includes a basic framework made up of metal beams and constituted by a front frame **10**, an identical rear frame **11** and four foldable beams **12**, **13**, **14** and **15** which interconnect the four corners of the two frames. Each beam is formed by a pair of arms whose adjacent ends are hinged together and whose opposing ends are hinged to the associated corners of the frames.

Front frame **10** is formed by a high vertical post **10A** and a shorter vertical post **10B**, the upper ends of the two posts being connected by a horizontal piece **10C** in series with an inclined piece **10D**. Extending between the two vertical posts and adjacent the bottom thereof is a horizontal brace **10E**, the portion of the posts below this piece constituting feet members to permit the insertion of a lifting skid thereunder. The rear frame **11** is of identical construction.

Mounted within front frame **10** is a front wall panel **16** and within rear frame **11** is a rear wall panel **17**. These panels, which may be of plastic, are of relatively lightweight construction, for they are not load bearing members. Hingedly connected to post **10A** of the front frame is an end panel **18** serving as the container door, while hingedly connected to post **11A** of the rear frame is a smaller end panel **19**. Hinged to the brace **11E** of rear frame **11** is is a floor panel **20**. Hinged to the upper horizontal piece **11C** of rear frame **11** is a flat roof section **21** and hinged to the inclined piece **11D** is a sloped roof section **22**.

When the container is erected, as shown in FIG. 4, all hinged panels are locked in place on the framework by suitable retractable locking mechanisms or catches of standard design (not shown). Use is also made of hinges which permit the associated panels to occupy their assigned positions in the collapsed state and to occupy their proper positions on the framework in the erected state, the hinge structures being such as to preclude separations at the hinge positions which would otherwise admit dust or other foreign matter into the container.

In collapsing an empty container, as shown in FIG. 3, first roof sections **21** and **22** are unlatched from the framework and folded against the outer surface of rear panel **17**. End panel **19** is then folded against the outer surface of rear panel **17**. Then the floor panel **20** is unlatched and folded against the inner surface of the rear panel **17**, after which the door panel **18** is folded against the outer surface of front panel **16**.

The foldable beams **12**, **13**, **14** and **15** are then bent in, thereby bringing the front frame **10** against the rear frame, all hinged panels being folded thereagainst, as shown in FIG. 5. Thus the collapsed structure is highly compact, and when returned by carrier, the freight charge will be primarily determined by weight rather than volume.

In order to support articles of apparel within the container, a pair of curved hanger bars **23** and **24**, as shown in FIG. 4 are removably mounted at their ends on the top cross beams **12** and **13** at spaced positions. In use, two rows of apparel are directly suspended from these bars by a suitable set of hangers (not shown) to form an upper tier of clothing. Vertical stringers are attached to the bars in the manner disclosed in my copending application, and connected to the stringers in a second set of hangers for supporting an intermediate tier of apparel in overlapping relation with the upper tier. Also connected to the stringers is a third set of hangers for supporting a lower tier of apparel in overlapping relations with the intermediate tier.

The reason for overlapping the tiers is in order to densely pack the contoured container, not only to make optimum use of the available space but also to restrict the freedom of movement of the articles of apparel to prevent them from rubbing against each other in transit. Such rubbing may cause damage to the clothing and possibly rip off buttons, etc.

What I claim is:

1. A collapsible contoured container comprising:

(a) a framework constituted by front and rear frames and foldable cross beams interconnecting the corner of said frames, each frame being formed by two spaced vertical posts of unequal height, the upper ends of the posts being connected by a horizontal piece in series with an inclined piece to produce the desired contour, and a horizontal brace extending between said posts,

(b) front and rear panels fixedly mounted on said frames,

(c) a floor panel hingedly connected to the brace of said rear frame and foldable against the inner surface of the rear panel,

(d) a door panel hingedly connected to the higher post of the front frame and foldable against the outer surface of the front panel,

(e) an end panel hingedly connected to the lower post of the rear frame and foldable against the outer surface of the rear panel, and

(f) a roof hingedly connected to the rear frame and foldable against the rear panel.

2. A container, as set forth in claim **1**, wherein said roof is formed by a horizontal section hingedly connected to the horizontal piece of the rear frame and a sloped section hingedly connected to the inclined piece of the rear frame, said sections being foldable against the outer surface of the rear panel.

3. A container, as set forth in claim **1**, wherein said brace is spaced from the bottom of the posts to provide feet therefor whereby a skid may be inserted under the container.

4. A container as set forth in claim **1**, wherein said framework is formed by metal beams and said panels are formed of plastic sheets.

5. A container as set forth in claim **1**, further including curved hanger bars attachable to the upper foldable beams to support items of apparel.

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WILLIAM T. DIXSON, JR., Primary Examiner

U.S. Cl. X.R.

217—14; 220—6