July 10, 1956 R. M. BERGSTEIN 2,754,028

REINFORCED BOTTLE CARRIER

Filed Feb. 28, 1952 2 Sheets-Sheet 1

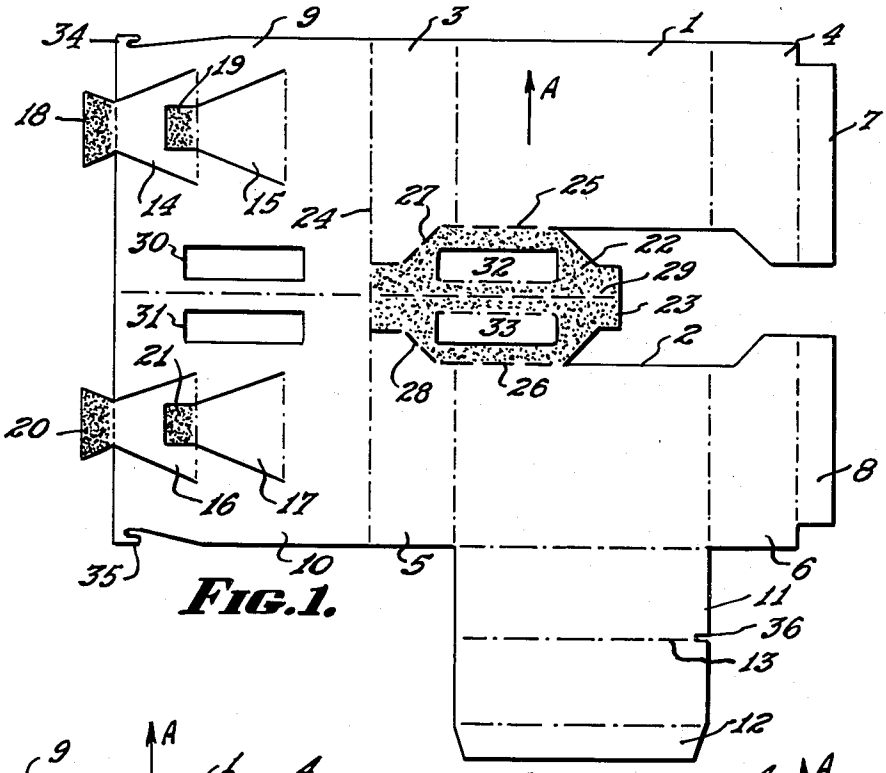


FIG. 1.

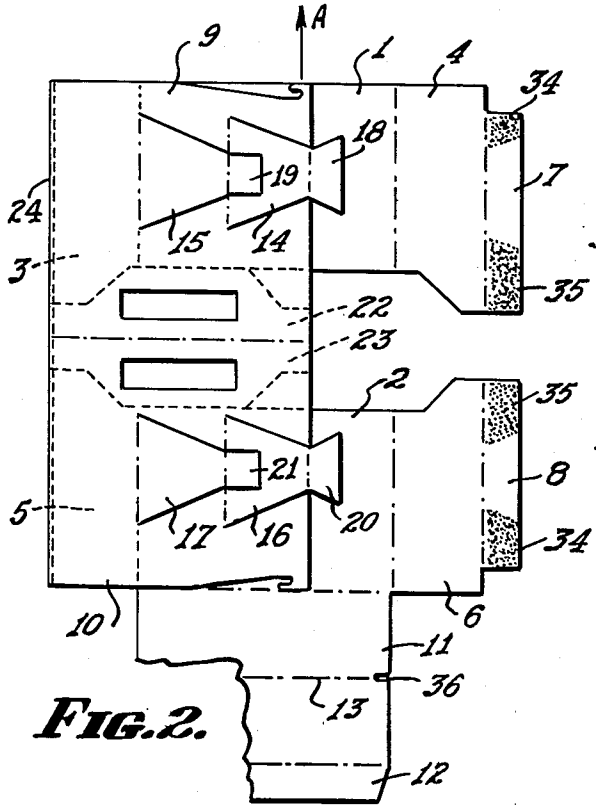


FIG. 2.

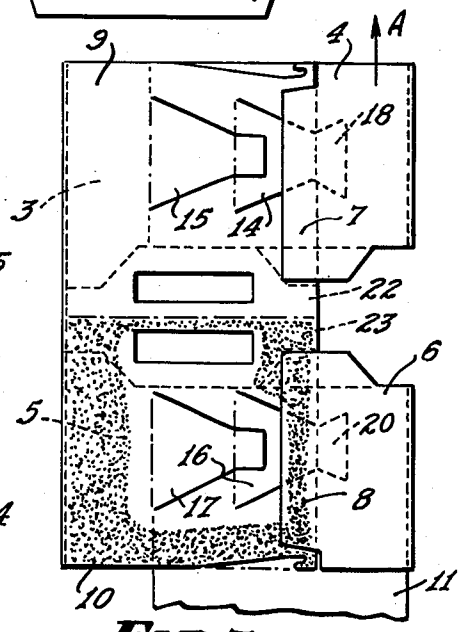


FIG. 3.

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REINFORCED BOTTLE CARRIER

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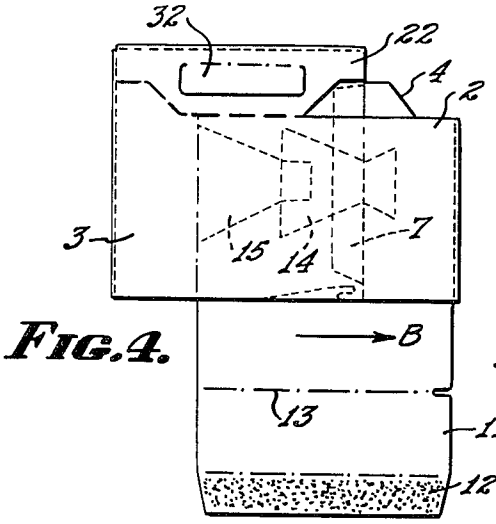


FIG. 4.

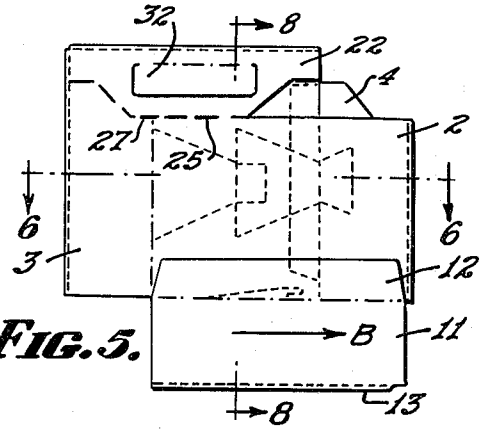


FIG. 5.

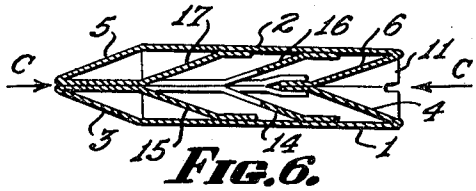


FIG. 6.

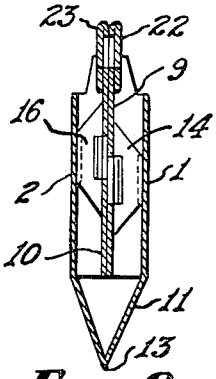


FIG. 8.

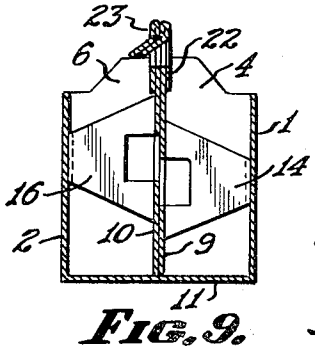


FIG. 9.

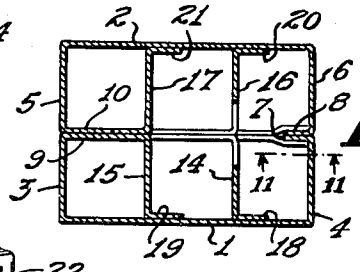


FIG. 7.

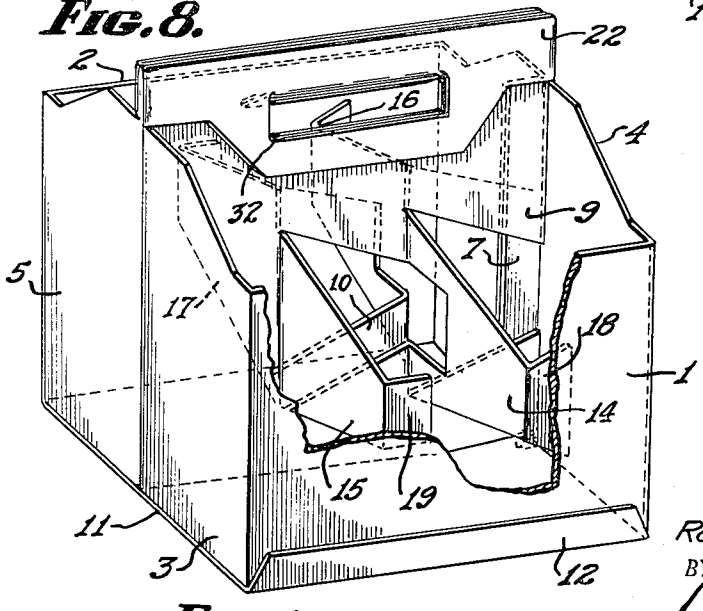


FIG. 10.

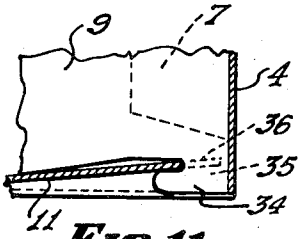


FIG. 11.

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2,754,028

REINFORCED BOTTLE CARRIER

Robert Morris Bergstein, Wyoming, Ohio, assignor to The Bergstein Packaging Trust, a trust composed of Robert M. Bergstein and Frank D. Bergstein, trustees

Application February 28, 1952, Serial No. 273,895

1 Claim. (Cl. 220—113)

My invention relates to collapsible paperboard bottle carriers. In particular, the invention is directed to the provision of sturdy, reinforced carriers adapted to receive a plurality of bottles or containers, wherein it is desired to provide both a means for packaging the bottles for shipment to the retailer as well as a convenient means for the purchaser to carry the bottles home with him.

As the bottle carrier art has developed, it has become increasingly important to provide carriers which are strong enough to withstand a plurality of trips, i. e. use by the purchaser to carry home the bottles and then return the empties in the carrier for reuse, and yet sufficiently inexpensive to compensate for the many carriers which are never returned by the purchaser. Also, there has been an increasing demand for suitable carrier structures for use with the so called "one-way" or disposable bottles which do not have to be returned by the purchaser. Thus, in such carriers, strength and economy are principal requisites. In addition, the bottler demands a carrier which is collapsible so that it may be stored until ready for use in the least amount of space. Yet the construction must be such that the carrier can be easily and quickly erected when needed and maintained in the erected condition until filled. Also, there is an increasing demand for carriers which are fully partitioned, i. e. the individual bottles or containers are separated from each other, both as a protective measure and also to provide accurate spacing means where automatic loading equipment is employed to load the carriers. The same is true where automatic unloading equipment is used in connection with returnable bottles.

It is a principal object of my invention to provide a carrier structure incorporating all of the above enumerated features.

It is an object of my invention to provide a carrier which can be completely folded and glued on standard equipment of the type generally employed in the manufacture of folding box structures, thereby eliminating the necessity for special equipment in the hands of the carrier manufacturer.

Another object of my invention is the provision of a sturdy bottle carrier in which reinforced handle or carrying portion is provided by utilizing material which would be normally scrapped-out and thrown away, thereby providing a reinforced structure which in effect employs no more boxboard in its manufacture than would a carrier not having the reinforced feature.

Yet another object of my invention is the provision of a carrier having a double thickness center partition structure and transverse partition elements struck from the center partition structure and extending outwardly to the side walls of the carrier, thereby providing a separate compartment or cell for each bottle, the construction being such that the transverse partition elements are in vertically staggered or off set relation so that the openings formed in the center partition members by the transverse partition elements will be partially covered,

thereby increasing the protection afforded by the central partition members without having to provide extra boxboard for the purpose.

Still another object of my invention is the provision of a reinforced carrier structure which does not require the insertion of separate pieces or other costly hand operations which would act to increase the cost of the finished structure.

These and other objects of my invention which will be set forth hereinafter or will be apparent to the skilled worker in the art upon reading these specifications, I accomplish by that construction and arrangement of parts of which I shall now describe an exemplary embodiment.

Reference is made to the accompanying drawings wherein:

Figure 1 is a plan view of the blank for my carrier.

Figures 2, 3, 4 and 5 are plan views illustrating the successive stages in the folding and gluing of the blank.

Figure 6 is a sectional view taken along the line 6—6 of Figure 5 with the parts in slightly expanded condition.

Figure 7 is a view similar to Figure 6 but showing the parts in the fully erected condition.

Figure 8 is a sectional view taken along the line 8—8 of Figure 5 with the parts in slightly expanded condition.

Figure 9 is a view similar to Figure 8 but showing the parts in erected condition.

Figure 10 is a perspective view with parts broken away of the fully erected carrier.

Figure 11 is a sectional view taken along the line 11—11 of Figure 7 and showing details of the means for locking the carrier structure in the erected condition.

In the drawings, solid lines indicate lines of cut, dot-dash lines indicate lines of score, and dash lines indicate lines for severance.

With reference to Figure 1, the blank comprises side walls **1** and **2**, partial end wall panels **3**, **4**, **5** and **6**, attachment flaps **7** and **8**, and center partition and handle forming panels **9** and **10**, all articulated together in the manner illustrated. A bottom forming panel **11** is articulated to the bottom edge of side wall **2** and it carries an articulated glue flap **12**. The bottom panel is also medially scored as at **13**. Transverse partition elements **14**, **15**, **16** and **17** are provided in center partition panels **9** and **10**, the transverse partition elements having glue tabs **18**, **19**, **20** and **21** articulated thereto. A pair of reinforcing handle portions **22** and **23** are nested between the side walls **1** and **2**, the reinforcing portions being articulated at one end to the center partition panels **9** and **10** along the score line **24** and connected to the side walls **1** and **2** along the lines for severance **25** and **26**. The reinforcing portions are also secured to the partial end wall panels **3** and **5** along the lines for severance **27** and **28**. A line for severance **29** separates the reinforcing portions from each other. Hand holes **30** and **31** are provided in center partition panels **9** and **10**, and handhole forming tabs **32** and **33** are provided in the handle reinforcing portions **22** and **23**.

The blank just described is formed into a flat folded carrier structure by the successive steps illustrated in Figures 2 through 5 of the drawings. While the blank may be folded and glued by hand, it must be capable of being folded and glued automatically to be commercially feasible. While the machinery whereby the blank is folded and glued does not constitute a limitation on my invention, the blank is nevertheless particularly adapted to be folded on a right angle folding and gluing machine of the type in general use in the carton making industry. Where such machinery is employed, the blank is first moved in the direction indicated by the arrow A seen in Figures 1, 2 and 3.

As the blank is moved along in the direction A, adhesive is first spotted on glue tabs **18**, **19**, **20** and **21** and

also on the reinforcing portions 22 and 23, as indicated by the shaded areas in Figure 1. The center partition panels 9 and 10 are then folded along the score line 24 so as to bring the adhesively coated glue tabs 18, 19, 20 and 21 into contact with the side walls 1 and 2. The blank now assumes the condition illustrated in Figure 2. When in this condition, limited areas of adhesive 34 and 35 are applied to attachment flaps 7 and 8, the adhesive areas being positioned to avoid contact with transverse partition elements 14 and 16 when the partial end wall panels are infolded along the score lines separating them from side walls 1 and 2 to assume the position illustrated in Figure 3, thereby bringing the attachment flaps 7 and 8 into adhesive engagement with the ends of side walls 1 and 2.

When the blank is folded to the condition of Figure 3, adhesive is applied to the center partition panel 10 and attachment flap 8, the adhesive being indicated by the shaded area in the figure. It will be noted that the adhesive is omitted from the transverse partition elements 16 and 17 as well as from any area which would come in contact with the transverse partition elements 14 and 15 when the center partition elements are folded in back-to-back relation. The application of adhesive to the center partition panel 10 may occur either as the blank moves in the initial direction A or as the blank stops and is moved in the secondary direction B, the latter direction being indicated by the arrow B in Figures 4 and 5.

Upon movement of the partially folded blank in the direction B, the next fold occurs along the line of articulation separating the center partition panels 9 and 10, and the juxtaposed line for severance 29, so as to bring the center partition panels 9 and 10 into back-to-back juxtaposition, as seen in Figure 4, the two panels being adhesively secured together by means of the adhesive carried by the panel 10.

The enforced folding of the center partition panels 9 and 10 into back-to-back juxtaposition causes reinforcing portions 22 and 23 to separate from each other along the line for severance 29, the panels being caused to break apart as they are folded about the double thickness top edge of the center partition panels 9 and 10. The detachable engagement of the reinforcing portions 22 and 23 is preferred to initially separating them, as by a line of cut, since a line of cut would tend to materially weaken the blank and make it harder to handle and manipulate during the earlier folding stages.

The final step in the formation of the flat folded carrier structure is illustrated in Figure 5, wherein the bottom panel 11 is folded along the median score line 13 to bring glue flap 12 into contact with side wall 2, adhesive having been previously applied to flap 12, as indicated by the shading in Figure 4.

The blank so formed is erected by applying inwardly directed pressure against opposite ends of the carrier, as indicated by the arrows C in Figure 6. The inwardly directed pressure against the ends of the carrier causes the side walls to swing outwardly, the side walls parting from the reinforcing portions 22 and 23 and the partial end wall panels 3 and 5 along the lines for severance therebetween. The attachment of the reinforcing portions to the sides and end wall panels of the blank is preferred to initially separating the parts, as by lines of cut, since their attachment by means of lines for severance strengthens the blank transversely during its initial movement and in addition acts to hold the reinforcing portions in back-to-back contact with the center partition panels when the blank is folded to the condition of Figure 4. If the reinforcing portions were not attached to the side walls and end wall panels, and the adhesive securing them to the center partition panels had not fully set by the time the parts are folded into back-to-back relation, the reinforcing portions would have a tendency to pull away from the underlying center partition panels due to the natural tendency of the parts to resist folding. Lines for severance 25, 26, 27 and 28 prevent any undesirable movement of the reinforcing portions and thereby assure severance of the reinforcing portions from each other along the line for severance 29.

The outward movement of the side walls relative to the center partition panels causes the transverse partition elements 14, 15, 16 and 17, attached to the side walls by means of the attachment tabs 18, 19, 20 and 21, to swing outwardly away from the center partition panels until they lie at substantially right angles to both the central partition panels and the side walls. The relative movement of the side walls and center partition panels also causes the partial end wall panels at each end of the carrier to come into coplanar positions, and the carrier assumes the fully erected condition illustrated in Figures 7, 9 and 10.

The carrier is maintained in the erected condition by means of the locking device most clearly seen in Figures 1 and 11. It comprises a pair of mating tongues 34 and 35 carried by the center partition panels 9 and 10 which together are adapted to engage a slot 36 lying along the end of median line 13 in bottom panel 11, the engagement of the tongues and slot being most clearly seen in Figure 11. The locking tongues are inwardly directed in the direction of collapsibility of the carrier so that the natural tendency of the carrier to assume the collapsed or partially collapsed condition will serve to maintain the tongues in positive contact with the slot and thereby maintain the carrier in the erected condition. Of course, the carrier may be again collapsed when desired simply by moving the parts slightly past center so as to permit the tongues to be disengaged from the slot.

As can be best seen in Figures 9 and 10, the transverse partition elements on opposite sides of the carrier are in vertically staggered relation, i e. the panels 14 and 15 are off set downwardly with respect to the partition elements 16 and 17. This staggered or off set relationship permits partial overlapping of the center partition panels and the openings created by the transverse partition elements when the carrier is erected, and I have found that this overlapping or partial covering of the opening formed in the center partition panels reduces the effective size of the openings to the extent that completely satisfactory protection is afforded between the rows of bottles without the necessity of providing an additional center partition part to cover the openings. I have found that the staggering of the transverse partition elements in no way adversely affects the definition of the cells or compartments defined by the transverse partition elements and yet the construction provides greater protection along the center partitions to the extent that there will be no bottle-to-bottle contact through the openings remaining in the central partition panels.

In my construction the carrier handle is extremely well braced and reinforced against tearing by the reinforcing handle portions which provide, in effect, a handle comprising four thicknesses of board. Not only is the handle extremely strong, but in addition the reinforcing portions, as already indicated, are formed from areas of boxboard which would normally be scrapped-out and thrown away.

The blank for my carrier is so arranged that a full nest is provided along the bottoms, i. e. a pair of blanks will nest together end-to-end along their bottom edges, thereby effecting a very major saving in material with consequent lower cost for the carrier.

It will be understood that modifications may be made in my invention without departing from the spirit of it. Having, however, described my invention in an exemplary embodiment what I desire to claim and protect by Letters Patent is:

In a paperboard bottle carrier, a pair of center partition panels in back-to-back relation, a plurality of transverse partition elements struck from each of said center partition panels to form corresponding pairs of transverse partition elements displaceable outwardly with re-

spect to the center partition panels from which they are struck, said corresponding pairs of transverse partition elements extending in the same direction when in the planes of their respective center partition panels and connected thereto along vertically disposed and coinciding lines of fold, said corresponding pairs of transverse elements being displaced vertically with respect to each other, so that upon displacement of the said transverse partition elements from the planes of their center partition panels, the openings created in each of the center partition panels by the displacement of the transverse partition elements therefrom will be in part covered by the other of the center partition panels, at least one of the transverse partition elements formed in each of the

center partition panels including an attachment tab formed from the next adjacent transverse partition element in such panel.

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