June 10, 1958 P. A. GRAF 2,838,223

CAN CARRIER

Filed Dec. 28, 1956 2 Sheets-Sheet 1

Fig. 1.

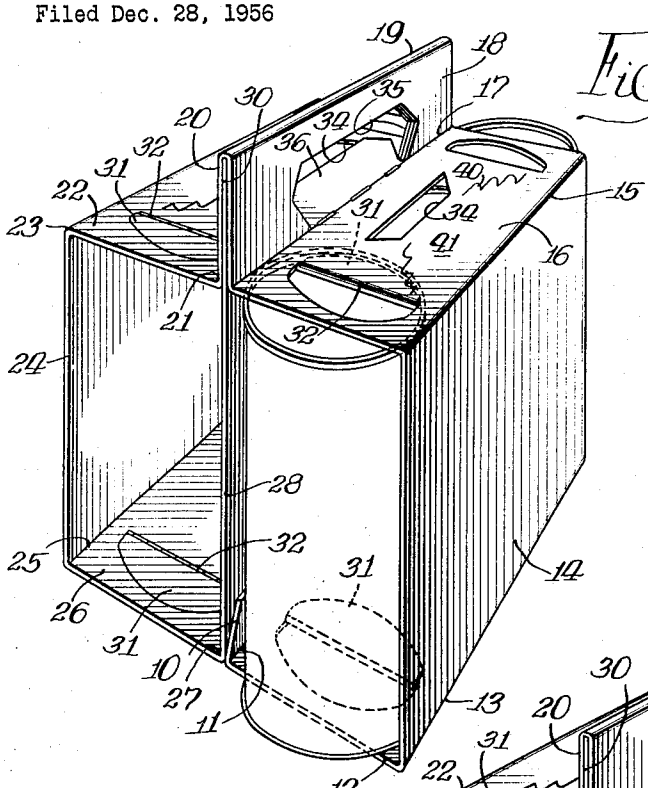

Fig. 2.

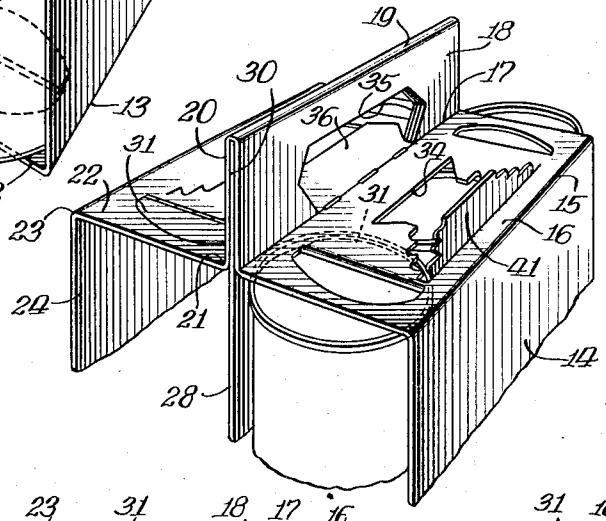

Fig. 3.

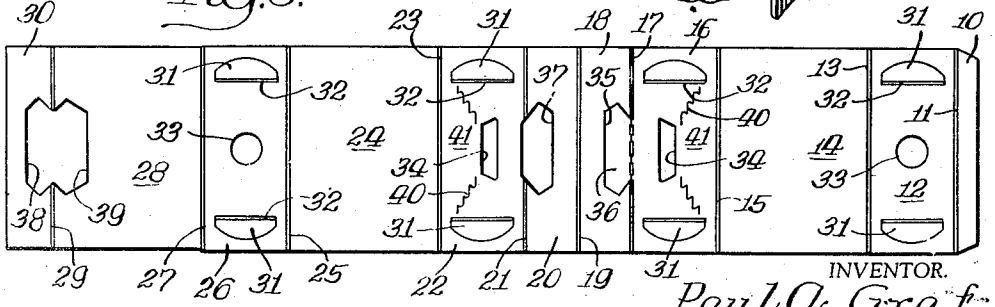

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Fig. 4.

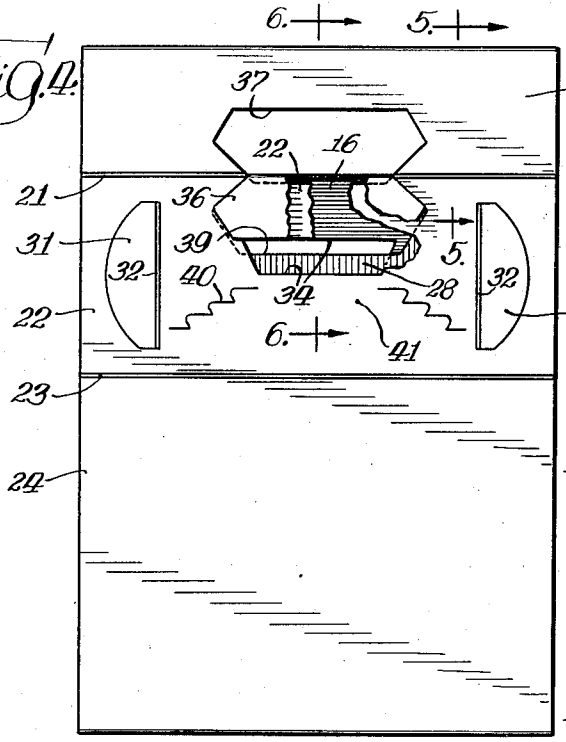

Fig. 7.

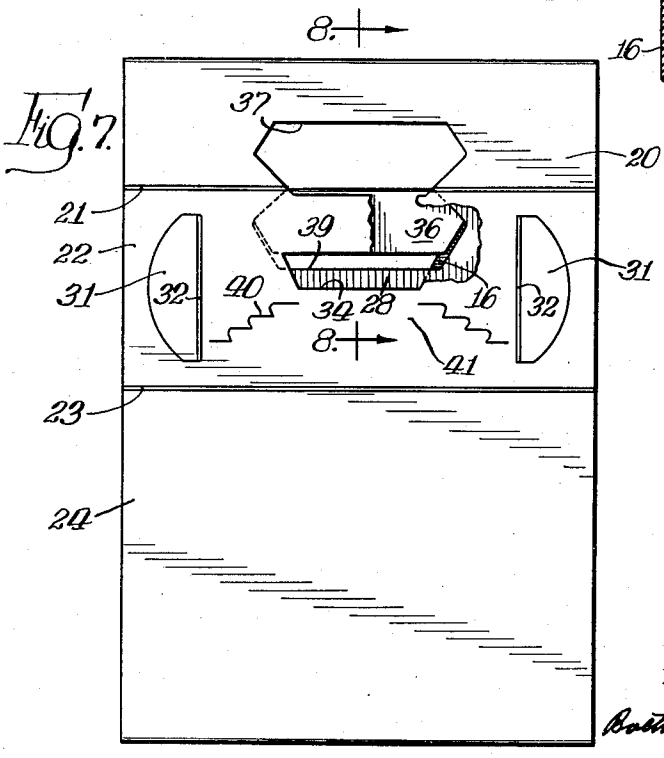

Fig. 5.

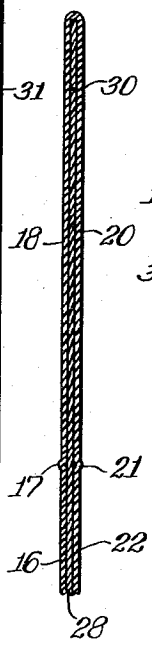

Fig. 6.

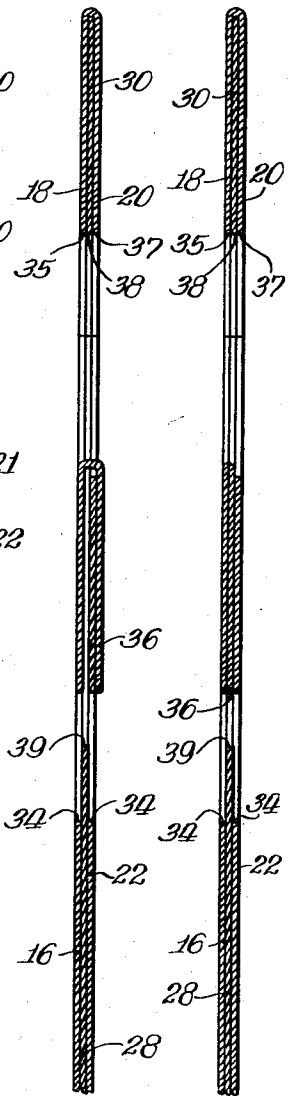

Fig. 8.

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CAN CARRIER

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Application December 28, 1956, Serial No. 631,175

2 Claims. (Cl. 229—52)

This invention relates to can carriers, and has to do with can carriers of the open ended band type.

Can carriers of the type referred to are well known and extensively used, many millions of such carriers being used annually. The can carrier field is highly competitive and one in which the cost of production is of primary importance. In many can carriers of the type referred to the top wall is provided with a tear out portion for ready release of the cans normally retained in the carrier by retaining tabs folded inwardly to engage the inner portions of the chimes of the end cans in the carrier, it being understood that carriers of the type referred to are used for transporting chimed end cans containing beverages and other liquids. It is desirable that the top wall of the carrier be effectively reinforced throughout its length for supporting the load of the cans and, also, for resisting pressure incident to tearing of the top wall to release the cans, the carrier commonly being formed of paperboard or other sheet material having considerable tensile strength. In order that the carrier may be produced at sufficiently low cost to meet competitive conditions, it is important that the blanks from which the carriers are formed be such as to reduce waste of material to a minimum while being capable of being folded and glued by machinery and at high speed. In that connection, it is desirable that the carrier, when folded for gluing, be of as near uniform thickness as is practicable, in order to facilitate the gluing operation. My invention is directed to a carrier of the character stated which meets the above requirements and may be produced by high speed machinery at comparatively low cost. Further objects and advantages of my invention will appear from the detail description.

In the drawings:

Figure 1 is a perspective view of a can carrier embodying my invention, one side of the carrier being loaded with cans retained therein and the other side being empty;

Figure 2 is a fragmentary perspective view similar to Figure 1, showing the upper portion only of the carrier with one side of the top wall thereof torn open to release the end cans;

Figure 3 is a plan view, on a reduced scale relative to Figure 1, of the blank from which the carrier of Figure 1 is produced;

Figure 4 is a plan view of the carrier of Figure 1 in its flat folded condition and partly broken away to show inner portions thereof, this view being on the same scale as Figure 1;

Figure 5 is a fragmentary sectional view, on an enlarged scale, taken substantially on line 5—5 of Figure 4;

Figure 6 is a fragmentary sectional view, on an enlarged scale, taken substantially on line 6—6 of Figure 4;

Figure 7 is a view similar to Figure 4 but showing a modified form of carrier embodying my invention; and

Figure 8 is a sectional view, on an enlarged scale, taken substantially on line 8—8 of Figure 7.

The carrier of Figure 1 is formed from an elongated rectangular or oblong blank shown in Figure 3, cut from suitable sheet material, such as paperboard. The blank of Figure 3 is suitably cut and scored to provide a glue flap **10** hingedly secured along a fold line **11** to a first bottom wall panel **12** hingedly secured along a fold line **13** to a first side wall panel **14** to the upper edge of which is hingedly attached, along a fold line **15**, a first top wall panel **16** having attached to its inner edge, along a fold line **17**, a first handle flap **18** integrally hinged at its upper edge along a fold line **19** to a second handle flap **20**. The second handle flap **20** is integrally attached at its lower edge, along a fold line **21**, to the inner edge of a second top wall panel **22** integrally attached along a fold line **23**, at its outer edge, to the upper edge of a second side wall panel **24** integrally attached at its lower edge, along a fold line **25**, to the outer edge of a second bottom wall panel **26** integrally attached at its inner edge, along a fold line **27**, to the lower edge of a center partition panel **28** having, a short distance below its upper edge, a lengthwise fold line **29** providing, above such fold line, a third handle flap **30**. In the above description of the blank of Figure 3 the various elements thereof have been described with reference to the positions which they occupy in the carrier when the latter is in its set-up condition for use, with a view to avoiding confusion, as will be understood.

Each of the bottom wall panels **12** and **26** and each of the top wall panels **16** and **22** is provided, adjacent each end thereof, with a generally arcuate retaining tab **31** integrally hinged at its inner edge to the corresponding panel along a fold line **32** extending transversely of the panel parallel with the end edge thereof. Each of the bottom wall panels **12** and **26** may also be provided with a central drainage opening **33**, which is preferred, but is not essential and may be omitted if desired. Each of the top wall panels **16** and **22** is provided, at its midlength and somewhat nearer its inner edge than its outer edge, with an elongated generally rectangular opening **34**, handle flap **18** is cut to provide, at the midlength thereof, a generally rectangular opening **35** tapering at its end portions and a securing flap **36** comprising the material cut from opening **35** and integrally attached along a portion of fold line **17** to the inner edge of the corresponding top wall panel **16** from which opening **35** extends, and the handle panel **20** is provided, at its midlength, with an opening **37** similar to but preferably somewhat larger than opening **35**, the top edges of openings **35** and **37** being disposed substantially equidistant from the fold line **19** joining the upper edges of the handle panels **18** and **20**. The upper portion of the center partition panel **28** is provided with an opening comprising an upper portion **38** disposed at the midlength of the third handle flap **30**, and the lower portion **39** at the midlength of the center partition panel **28** and extending downward from the fold line **29**. The openings **35**, **37**, **38** and **39** are so disposed and of such size and shape that, in the completed carrier, the openings **35**, **37** and **38** will be aligned in approximate register with each other, with the opening **39** extending downward from the opening **38**, as will appear more fully later.

If desired, though not necessarily, each of the top wall panels **16** and **22** may be provided with tear lines **40** of step formation extending from adjacent the outer corners of opening **34** to the outer ends of the retaining flaps **31**, the tear lines **40** providing between them a tear out portion **41** which, by inserting the fingers through the opening **39**, may be torn from the panel to release the retaining tabs **31**, as is known. In Figure 3 the blank is shown with its inner face uppermost. In order to form the

blank into the carrier, the bottom wall panel **12** is folded over onto the side wall panel **14** and a coating of adhesive is applied to the then upper face of glue flap **10** and to the inner faces of the handle flaps **18** and **20**, including the securing flap **36** which remains in the plane of handle flap **18**. The second bottom wall panel **26** and the center partition panel **28** are then folded about the fold line **25** over onto the side wall panel **24** and the top wall panel **22**, with the third handle flap **30** seating on the adhesive coated face of the second handle flap **20** with fold lines **29** and **21** in register and opening **38** aligned and in substantial register with opening **37**. The partially folded blank is then folded over about the fold line **19** into position with the third handle flap **30** overlying the first handle flap **18**, the openings **38** and **37** overlying the securing flap **36**, the center partition panel **28** overlying the first top wall panel **16** and the upper portion of the first side wall panel **14**, and the second bottom wall panel **26** overlying the first bottom wall panel **12**, fold line **27** being then in register with fold line **11** and the adhesive coated face of glue flap **10** seating against the outer face of the lower portion of the center partition panel **28**. The securing flap **36** is then folded about the corresponding portion of fold line **17** and is passed through the openings **37** and **38** and folded downward to position with its adhesive coated surface seating on the inner portion of top wall panel **22** at the area thereof between openings **34** and **37**. That completes folding of the blank into carrier form and the folded blank is then maintained under appropriate pressure for a short time until the adhesive has set thus permanently securing the blank together in carton form. The carrier thus produced appears as in Figure 4 and may readily be stacked and shipped in bundles or bales in its folded condition. As will be understood from what has been said, and as is shown more clearly in Figures 4, 5 and 6, when the carrier is folded flatwise with the top wall panels **16** and **22** seating on the center partition panel **28**, the opening **39** at the upper portion of panel **28** extends downward from the three ply handle structure, provided by the handle flaps **18, 20** and **30** now secured together in face to face relation. The opening **39** then underlies the area of the top wall panel **22** corresponding to the securing flap **36** so that but three thicknesses of material are provided at such area. That is desirable in that the blank is of substantially uniform thickness when folded into carton form, which is conducive to application of uniform pressure to the folded blank during the period required for setting of the adhesive, which expedites the gluing operation.

To set the folded carrier up for use, it is subjected to vertical pressure which moves the bottom and top wall panels outwardly to horizontal positions, the side wall panels and the center partition panel assuming vertical positions and the handle structure extending upwardly from the top of the carrier. The three ply handle structure is integrally attached to the top wall panels and the center partition panel beyond the ends of the finger opening and the securing flap **36** effectively ties together the midportions of the top wall panels, the carrier as a whole possessing adequate mechanical strength and the handle structure being quite rigid and also possessing adequate mechanical strength. In Figure 1 one half of the carrier is shown as loaded with three chimed end cans disposed in a row at one side of the center partition panel **28** and the retaining tabs **31** folded inward of the carrier effective for restraining the end cans of the row against displacement. In order to release the end cans, the tear out portion **41** of top wall panel **16** may be torn loose from the remainder of that panel, along the weakened tear lines **40**, by inserting the fingers through the opening **34** provided for that purpose, so as to release the retaining tabs **31**, as shown in Figure 2.

The modified form of carrier shown in Figures 7 and 8 may be formed from the blank of Figure 3 and is the same as that of Figure 1 except that the securing flap **36** is secured to the inner or underface of the top wall panel **22**. To produce the carrier of Figures 7 and 8 the blank is folded in the same manner as above described except that preliminary to the third folding step, in which the blank is folded about the fold line **19**, the securing tab **36** is folded downwardly onto the inner face of top wall panel **16** and the then upper face of flap **36** is coated with adhesive. In the third folding step the blank is folded about fold line **19** into position with the portion of the top wall panel **22** between openings **34** and **37** seating on the adhesively coated surface of securing flap **36** and the latter disposed in the opening **39** of the center partition panel **28**, the lower portion of panel **28** seating on the adhesively coated surface of the glue flap **10**, as before. The folded blank is then maintained under appropriate pressure until the adhesive has set. In the completed blank, in its flat folded condition, the flap **36** is disposed in opening **39**, as previously noted, so that during the gluing operation, while the folded blank is maintained under pressure, there are but three thicknesses of material at the areas of the handle structure and the contiguous area of the securing flap **36**, with no projection beyond the outer face of either of the top wall panels. The areas of the folded carrier at the handle structure and the top wall panels thereof thus present smooth surfaces free of projections, which facilitates the gluing operation with the advantages previously referred to.

It will be understood that changes in detail may be resorted to without departing from the field and scope of my invention, and I intend to include all such variations, as fall within the appended claims, in this application in which the preferred forms only of my invention have been disclosed.

I claim:

1. A foldable can carrier formed from a one piece blank of sheet material and comprising a bottom wall having a lengthwise median fold line, side wall panels attached at their lower edges along fold lines to the side edges of said bottom wall and extending upward therefrom, two top wall panels attached at their outer side edges along fold lines to the upper edges of said side wall panels and extending inward therefrom, two handle flaps integrally connected together at their upper edges along a fold line and integrally attached at their lower edges along fold lines to the inner edges of said top wall panels and extending upward therefrom, a center partition panel attached at its lower edge to said bottom wall along a fold line contiguous to the median fold line thereof and extending therefrom upward between said handle flaps, the latter being secured to the upper portion of said center partition panel providing therewith a three ply handle structure, said handle structure being provided at the midportion thereof with aligned elongated finger openings, and a securing flap formed of material cut from one of said handle flaps to provide said finger opening therein and attached to the corresponding top wall panel, said securing flap extending through said finger openings and being secured to the other top wall panel, said center partition panel having at its upper portion an opening extending downward from the midportion of said handle structure and disposed to underlie the area of said other top wall panel corresponding to said securing flap, when said carrier is folded flatwise with said top wall panels seating on said center partition panel, said center partition panel opening being of a width and length at least as great as the width and length of said securing flap, the area of said carrier corresponding to said securing flap being of three thicknesses of material when said carrier is so folded.

2. A foldable can carrier formed from a one piece blank of sheet material and comprising a bottom wall having a lengthwise median fold line, side wall panels attached at their lower edges along fold lines to the side edges of said bottom wall and extending upward therefrom, two top wall panels attached at their outer side

edges along fold lines to the upper edges of said side wall panels and extending inward therefrom, two handle flaps integrally connected together at their upper edges along a fold line and integrally attached at their lower edges along fold lines to the inner edges of said top wall panels and extending upward therefrom, a center partition panel attached at its lower edge to said bottom wall along a fold line contiguous to the median fold line thereof and extending therefrom upward between said handle flaps, the latter being secured to the upper portion of said center partition panel providing therewith a three ply handle structure, said handle structure being provided at the midportion thereof with aligned elongated finger openings, and a securing flap formed of material cut from one of said handle flaps to provide said finger opening therein and attached to the corresponding top wall panel, said securing flap extending through said finger

openings and being secured to the inner face of the other top wall panel, said center partition having therein an opening adapted and disposed to receive said securing flap when said carrier is folded flatwise with said top wall panels seating on said center partition panel, the area of said carrier corresponding to said securing flap being of three thicknesses of material when said carrier is so folded.

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