May 18, 1965 H. E. FORBES, JR 3,184,136

CARTON STRUCTURE

Filed April 16, 1964 2 Sheets-Sheet 1

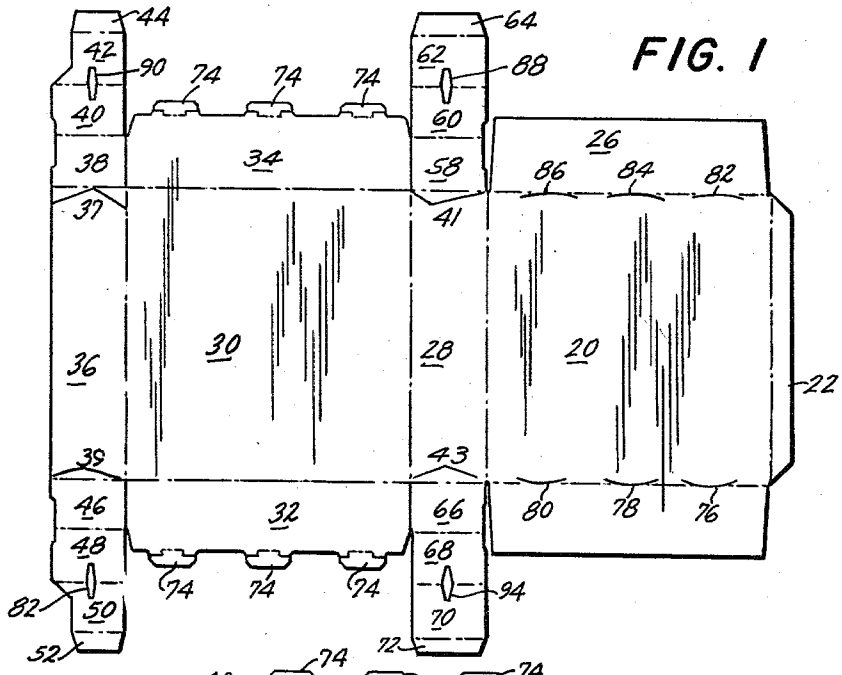


FIG. 1

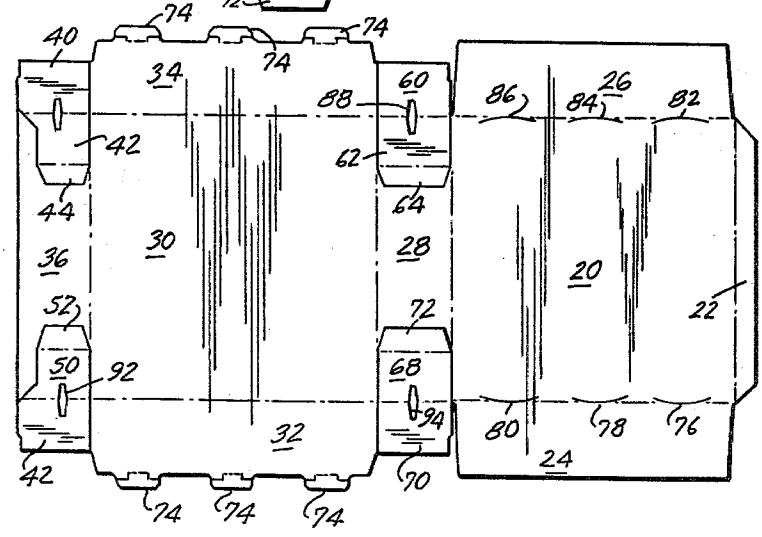


FIG. 2

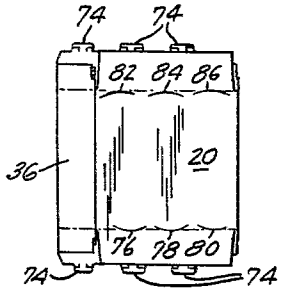


FIG. 3

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CARTON STRUCTURE

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FIG. 4

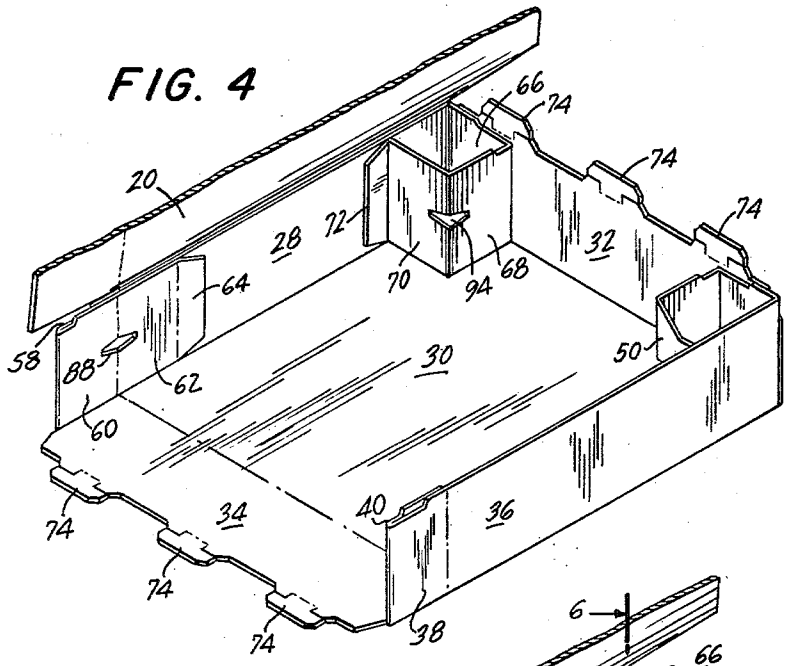
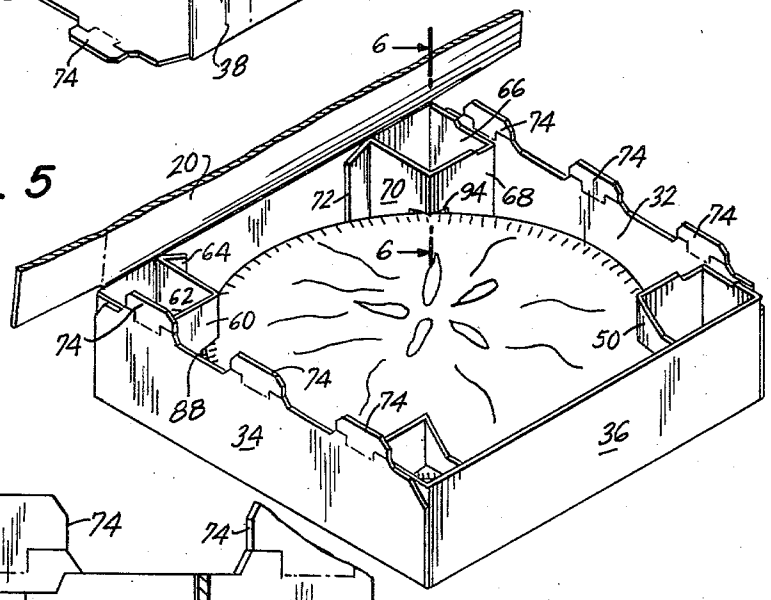


FIG. 5



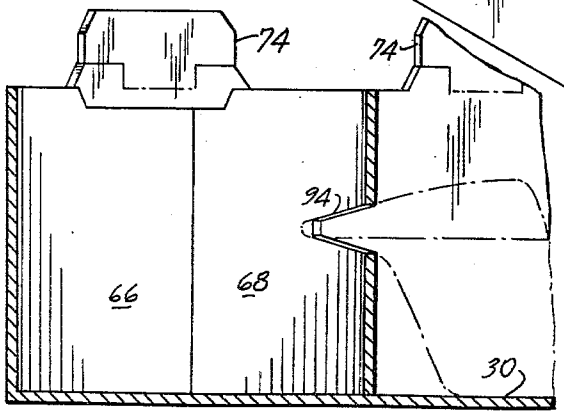


FIG. 6

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United States Patent Office 3,184,136 Patented May 18, 1965

3,184,136

CARTON STRUCTURE

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Filed Apr. 16, 1964, Ser. No. 360,399
3 Claims. (Cl. 229—14)

This invention relates to improvements in positioning devices for packaging, and more particularly to an improved pre-assembled cushion device as an integral part of a carton. My invention is a folding carton made from a blank which may be shipped in a folded condition, easily assembled for use. The pre-assembled cushion device is automatically set up for use when the folding carton itself is assembled.

Prior art folding cartons have utilized many devices for positioning and cushioning the contents of the carton, one such device utilized triangular panels. A great disadvantage of the prior art cartons was the inability to ship them in a flat condition. My invention permits the cushion device to be pre-assembled when the carton is manufactured, and to be easily erected when the folding carton is set up. The cushioning devices also serve to increase the resistance of the carton. When a packaged article is positioned within the supporting members the carton provides a strong and safe means for shipping and displaying fragile articles.

My invention provides for forming the cushion device as an integral part of a folding carton during its manufacture and it may be shipped in a flat folded condition and easily set up for use and providing that the cushion device is being formed automatically by the action of setting up the carton.

The possibility of modifications in the structure herein described without departing from the fundamental principals of the invention is recognized, and it is intended that the scope of the invention not be limited except as set forth in the claims.

Referring to the accompanying drawings

FIG. 1 is a plan view of a blank from which a carton of my invention may be constructed.

FIG. 2 illustrates the formation of a carton. The supporting members are folded over and onto their respective side wall panels.

FIG. 3 illustrates the completed blank in a flat folded condition.

FIG. 4 illustrates the erection of a carton from the folded blank. The supporting corner members are shown in their flat, folded condition and also in their erected condition.

FIG. 5 illustrates a completely assembled blank with a packaged article. The apertures of the cushion device are in engagement with the packaged article.

FIG. 6 is a cross section of FIG. 5 taken along section 6—6. The second and third spacer panel apertures are shown engaged with the edge of a packaged article, in this case a pie.

A suitable blank of sheet material is cut, slit, and scored to form top panel **20**, a pair of inner end flaps **24** and **26** foldably connected along opposite edges of top panel **20**, a glue flap **22** is foldably connected along another edge of top panel **20**, side panel **28** is foldably connected to top panel **20** along another edge thereof, top panel **20** has locking slits **76**, **78**, **80**, **82**, **84** and **86**, the side panel **28** has a pair of cushion side flaps **41** and **43**, cushion side flap **41** has first spacer panel **58** foldably attached to side panel **28**, second spacer panel **60** is foldably attached to first spacer panel **58**, third spacer panel **62** is foldably attached to second spacer panel **60**, a fastening panel **64** is foldably connected along an edge of third spacer panel **62**, second and third spacer

panels **60** and **62** have an aperture extending across the fold line connecting the two panels, similarly, panel **43** is foldably connected to another side of panel **28**.

Cushion side flap **43** has first, second, third spacer panels **66**, **68** and **70** and a fastening panel **72**.

The side flap **43** has an aperture extending across second and third spacer panels **68** and **70**.

A bottom panel **30** is foldably connected along another edge of said panel **28**.

The bottom panel **30** has a pair of outer flaps **32** and **34**, outer flap **32** has locking tabs **74** and outer flap **34** has similar locking tabs **74**.

A side panel **36** is foldably connected to bottom panel **30**, side panel **36** has a pair of spacer members **37** and **39** foldably attached along a pair of opposite edges.

FIG. 2 shows the formation of the cushion devices. The side flaps **37**, **39**, **41** and **43** are folded over a fold line between the first and second panels, unto a portion of side flap **36**. Similarly, side flaps **41** and **43** are folded into a porton of side panel **28**. Fastening flaps **44**, **52**, **64** and **72** are fastened to their respective side panels by suitable means such as glue; the second and third fastening panels overlie the first panel and a portion of the side panel.

FIG. 3 shows the carton assembled for shipping from the point of manufacture. The tab **22** is folded over into the side panel **36** and fastened by suitable means to that panel. The carton is shipped to the user in a flat condition using a minimum amount of space.

FIG. 4 shows the partially assembled carton. The top panel **20** is broken away to show the cushion devices. A cushion device can be erected easily by pushing the first spacer panel **68** to form a right angle to side wall **28** causing it to assume a rectangular shape as shown in FIG. 4.

FIG. 5 shows all cushion devices, assembled about a packaged object. The top panel **20** is broken away to show the cushion devices in position.

FIG. 6 shows a cross section of FIG. 5 along line 6—6. The engagement of the packaged object into the apertures of second and third panels **68** and **70** is clearly shown. It is understood that the position of the apertures is pre-determined by the height of the object to be packaged in relation to the carton dimensions. The preferred embodiment illustrates a packaged pie on a plate, and the aperture is placed to receive the rim of the pie plate. The carton is closed from one end after inserting a packaged article into the carton and assembling the cushion devices.

The carton is shown assembled for engaging the locking tabs at the top of the carton. It is evident that the carton could be turned upside down if the automatic machinery was designed for closing at the bottom.

The assembled cushion devices serve to position the packaged object, to protect it from touching the walls of the carton, and also act to brace the carton and prevent the walls from collapsing thus providing rigidity and resistance to stress.

What is claimed is:

1. A pre-assembled carton capable of being shipped flat and erected on automatic machinery for holding articles in a pre-determined spaced relationship with respect to said carton comprising,

(*a*) a top panel,

(*b*) a fastening panel attached to one side of the top panel,

(*c*) a first side panel foldably attached to the other side of the top panel,

(*d*) a bottom panel foldably attached to the first side panel,

(*e*) a second side panel foldably attached to the bottom panel,

(*f*) a pair of end flaps foldably attached to the top panel,

(*g*) a pair of end flaps foldably attached to the bottom panel,

(*h*) a pre-fastener cushion side flap foldably attached to at least one end of a side panel, each pre-fastened cushion side flap being capable of being folded flat during shipment of the empty carton and forming a corner cushion device when the carton is erected for use, each pre-fastened cushion side flap comprising:

(1) a first spacer panel foldably attached to a side panel,

(2) a second spacer panel foldably attached to the first spacer panel,

(3) a third spacer panel foldably attached to the second spacer panel,

(4) a fastening panel foldably attached to the third spacer panel and fastened to its respective side panel,

(5) means in said second and third spacer panels for engaging the article to be packaged.

2. The carton of claim 1 where a pre-fastened cushion side flap is attached at both ends of each side panel.

3. A pre-assembled carton structure capable of being shipped flat and erected on automatic machinery for holding articles in a pre-determined spaced relationship with respect to said carton comprising:

(*a*) a pair of parallel spaced panels forming a top and a bottom panel of a carton,

(*b*) a pair of parallel spaced side panels forming a first and a second side panel foldably attached to an edge of a top and bottom panel along opposite edges of each side panel,

(*c*) a pair of end flaps foldably attached to the top panel,

(*d*) a pair of end flaps foldably attached to the bottom panel,

(*e*) a side flap foldably attached to a least one end of each side panel, each side flap comprising:

(1) a first spacer panel foldably attached to a side panel,

(2) a second spacer panel foldably attached to the first spacer panel,

(3) a third spacer panel foldably attached to the second spacer panel,

(4) a fastening panel foldably attached to the third spacer panel and fastened to its respective side panel,

(5) means in said second and third spacer panels for engaging the article to be packaged.

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FRANKLIN T. GARRETT, *Primary Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,184,136 May 18, 1965

Hampton E. Forbes, Jr.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 2, line 9, for "said" read -- side --; column 3, line 5, for "pre-fastener" read -- pre-fastened --.

Signed and sealed this 28th day of September 1965.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents