Oct. 17, 1967 R. GUYER ETAL 3,347,446

POUR SPOUT CARTONS

Filed April 15, 1966 2 Sheets-Sheet 1

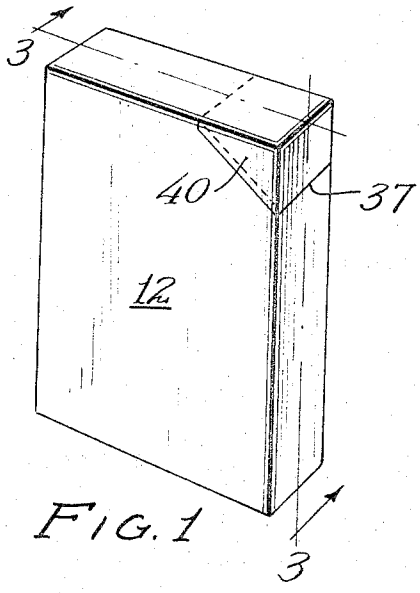


FIG. 1

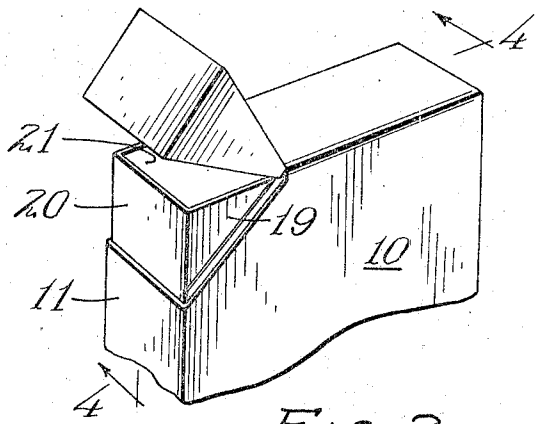


FIG. 2

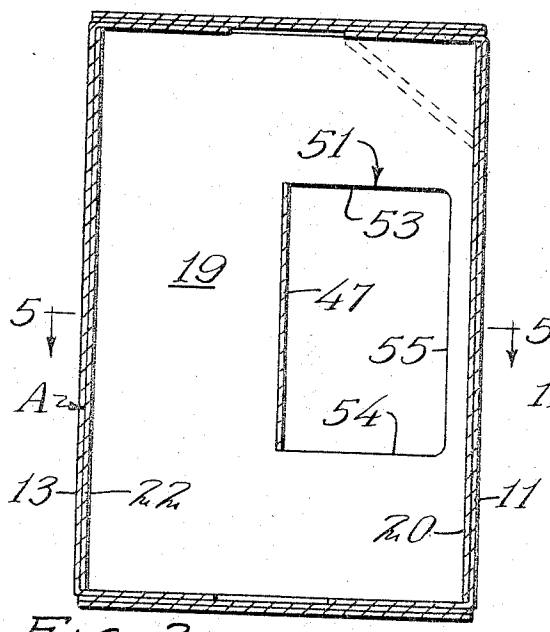


FIG. 3

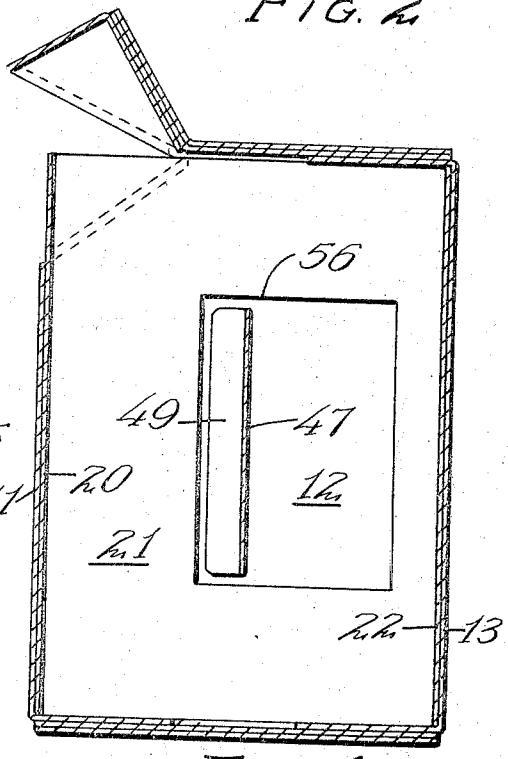


FIG. 4

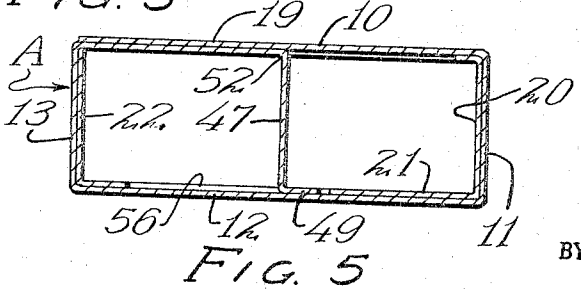


FIG. 5

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POUR SPOUT CARTONS

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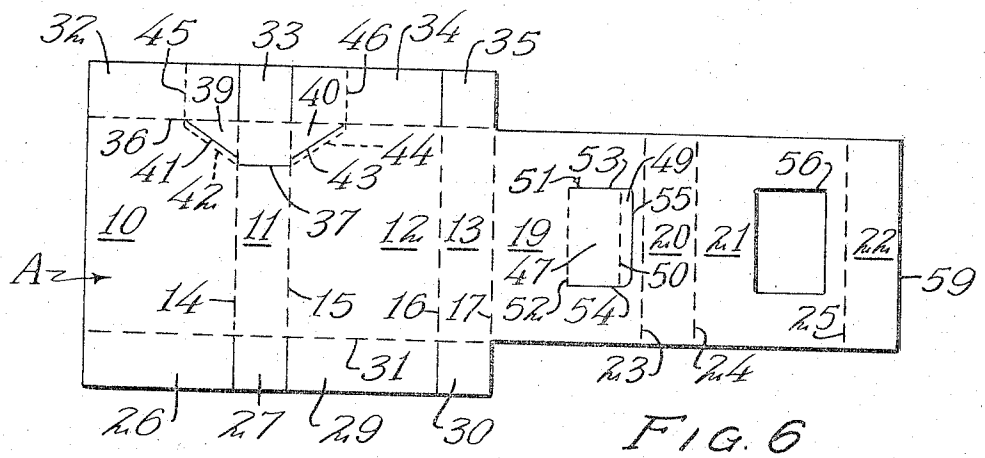


FIG. 6

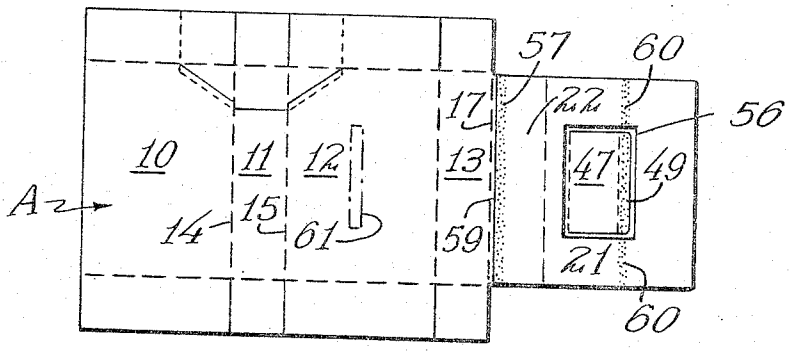


FIG. 7

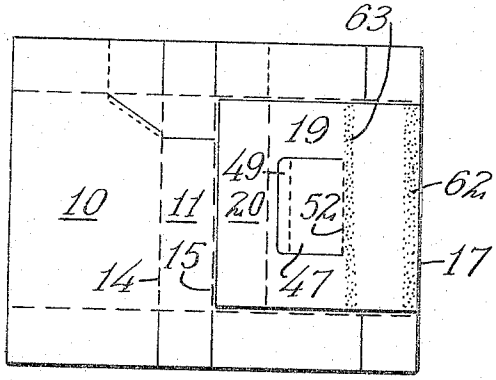


FIG. 8

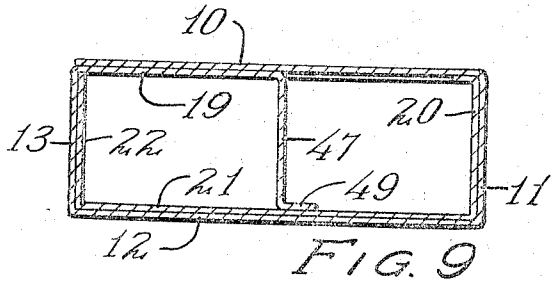


FIG. 9

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POUR SPOUT CARTONS

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Filed Apr. 15, 1966, Ser. No. 542,786
6 Claims. (Cl. 229—27)

This invention relates to an improvement in pour-spout cartons and deals particularly with a carton that may contain a pourable material and which incorporates a means for preventing the bulging of the walls of the carton.

Cartons which are used to contain powdered or granular material are usually made of relatively stiff and rigid paperboard due to the fact that the material contained tends to bulge the panels of the carton outwardly. Various methods have been devised for reinforcing the larger panels of such cartons to prevent the walls from bulging. For example, Patent 3,029,711 issued Apr. 17, 1962, to R. W. Griese shows a method wherein a narrow strip of a lightweight paper is secured to extend between central portions of the larger carton panels to hold them from separation. While this method functions effectively, it usually requires a separate operation to produce as the strip of paper must be applied to the blank by some means such as a cellophane window machine. Patent 3,106,876 shows a somewhat similar structure in which the partition strip is originally an integral part of the carton blank. The partition is formed by folding the partition strip onto the flat blank and adhering an edge of the strip to a panel of the blank before detaching the strip from the portion of the blank to which it was originally attached. This method also requires special machinery for detaching the partition strip from the blank.

An object of the present invention resides in the provision of a carton made of lightweight paperboard including an inner liner and an outer shell. A partition strip is cut from the body of the liner, remaining attached to the liner along a line of fold. The opposite edge of the partition strip is adhered to the wall of the carton opposite that to which the partition strip is foldably connected, thus preventing the opposite panels of the carton from bulging apart.

A further feature of the present invention resides in the formation of a hinged cover portion enclosing an upper corner of the liner. This hinged cover portion includes substantially triangular side portions defined by weakened lines of separation. These weakened lines of separation are formed by a cut score line extending partially through the paperboard from the outer surface, and a parallel cut score line extending partially through the paperboard from the inner surface thereof, the two cut score lines being in side by side relation. The arrangement is such that when the wall of the carton adjoining the triangular portions of the side walls is pressed inwardly, the paperboard will split intermediate its surfaces between the cut score lines, and the hinged cover portion may be hinged into open position. The carton contents may then be poured over the upper edge of the inner liner.

A further feature of the present invention resides in the fact that the reinforcing strip may, if desired, be attached directly to the outer shell of the carton. By providing an opening through the wall of the liner which is opposite the wall to which the partition is foldably connected, the free end of the partition strip may extend through the opening and then attached directly to the outer shell.

These and other objects and novel features of the present invention will be more clearly shown and described in the following specification and claims.

In the drawings forming a part of the specification,

FIGURE 1 is a perspective view of the carton in closed condition.

FIGURE 2 of the drawings is a perspective view of the upper portion of the carton in partially opened position.

FIGURE 3 is a vertical sectional view through the carton, the position of the second being indicated by the line 3—3 of FIGURE 1.

FIGURE 4 is a vertical sectional view through the partially opened carton, the position of the section being indicated by the line 4—4 of FIGURE 2.

FIGURE 5 is a horizontal sectional view through the carton, the position of the section being indicated by the line 5—5 of FIGURE 3.

FIG. 6 is a diagrammatic view of the inside of the flat blank.

FIGURE 7 is a plan view of the blank at the completion of the first folding operation.

FIGURE 8 is a plan view of the blank at the completion of the second folding operation and just before the final fold is made.

FIGURE 9 is a horizontal sectional view similar to FIGURE 5 showing a modified form of construction.

The carton is made from the blank best illustrated in FIGURE 6 of the drawings. As is indicated in this figure, the blank includes a side wall **10**, an end wall **11**, a side wall **12**, and a second end wall **13**, these walls being connected along parallel fold lines **14**, **15**, and **16**. The rectangular liner is hingedly connected to the end wall **13** along a fold line **17**. The liner includes a side wall **19**, an end wall **20**, a second side wall **21**, and a second end wall **22** which are foldably connected along parallel lines of fold **23**, **24**, and **25**, which fold lines are parallel to the previously described fold lines.

Bottom closure flaps **26**, **27**, **29**, and **30** are foldably connected to the lower edges of the walls **10**, **11**, **12**, and **13** along a substantially common line of fold **31**. Top closure flaps **32**, **33**, **34**, and **35** are foldably connected to the upper edges of the walls **10**, **11**, **12**, and **13** along a substantially common line of fold **36**.

A hinged cover portion is defined by a cut line **37**, or weakened line of separation, which extends across the end wall **11** spaced from, and parallel to, the fold line **36**. Weakened lines of separation extend diagonally across the upper corners of the side walls **10** and **12** to define generally triangular corner portions **39** and **40**. The weakened line of separation in the panel **10** includes a cut score line **41** which extends into the inner surface of the paperboard extending partially, but not entirely, through the paperboard. This weakened line also includes a cut score line **42** in the outer surface of the paperboard in parallel side by side relation to the cut score line **41**. When the portion of the panel **10** adjoining the triangular portion **39** is pressed inwardly, the paperboard will split between the cut score lines **41** and **42** to separate these areas.

A similar weakened line of separation extends diagonally across the upper corner of the panel **12**. This weakened line includes a cut score line **43** extending from the end of the cut line **37** to the fold line **36**, and a second parallel side by side cut score line **44** in the outer surface of the paperboard. When the area of the panel **12** adjoining the triangular portion **40** is pressed inwardly, the paperboard will split between the cut score lines **43** and **44**.

To complete the hinged cover portion, fold lines **45** and **46** extend across the closure flaps **32** and **34** in equally spaced relation to the end edges of these flaps, the two fold lines **45** and **46** being in registry when the closure flaps are in closed position. The fold lines **45** and **46** extend across the respective flaps from the ends of the weakened lines of separation. When the weakened lines of separation are fractured, the corner of the carton may be

swung into open position as indicated in FIGURE 2 of the drawings.

A reinforcing panel 47 is provided in the liner panel 19. The reinforcing panel 47 is hingedly connected to an anchoring flange 49 along a fold line 50. The partition panel 47 and its anchoring flange 49 are defined by a U-shaped cut line 51 in the panel 19, the ends of the U-shaped cut line terminating at the ends of a fold line 52 which extends substantially vertically along the center line of the panel 19. The cut line 51 includes top and bottom cut lines 53 and 54 which define the top and bottom edges of the partition structure, and a vertical fold line 55 which defines an edge of the anchoring flange 49.

In the preferred form of construction, the liner panel 21 is provided with a rectangular aperture 56 which is in registry with the partition panel 47 and its anchoring flange 49, when the blank is folded along the fold line 24. The purpose of this aperture 56 will be described. The blank is first folded in the manner best illustrated in FIGURE 7 of the drawings, with a further step of the production illustrated in FIGURE 8. In forming the carton A, the blank is folded along the fold line 24 so that the liner panels 21 and 22 are superimposed upon the liner panels 19 and 20. As indicated in FIGURE 7 of the drawings, the entire area of the partitioned panel 47 and its anchoring flange 49 is then visible through the rectangular aperture 56. A strip of adhesive 57 is applied to the outer surfaces of the liner panel 22 along the outer edge 59 of the blank. Adhesive is also applied to the anchoring flange 49. In some instances, adhesive areas 60 are also applied to the panel 21 to adhere this liner panel to the side wall 12 of the outer shell. The broken line 61 shown in the panel 12 indicates the area to which the anchoring flange 49 will be attached.

When adhesive has been applied to the areas to be adhered, the blank is folded along the fold line 17 so that the liner panels 22 and 21 will overlie the outer end and side wall panels 13 and 12, respectively. During this operation, the end wall liner panel 22 is adhered to an edge of the end wall 13 of the outer shell, and the anchoring flange 49 is adhered to the area 61 of the side wall 12. The blank of the carton A is indicated in this position in FIGURE 8 of the drawings.

An adhesive area 62 is applied to the edge of the outer surface of the liner panel 19 along the fold line 17. Preferably, a line of adhesive 63 is also applied across the panel 19 adjacent to the fold line 52 connecting the panel 19 to the partition panel 47. The purpose of the adhesive area 63 is to anchor the center portion of the side wall 10 to the outer surface of the liner panel 19 which will lie inwardly thereof. The folding of the carton is completed by folding the blank along the fold line 15 to bring the end wall 11 into position overlying the liner end wall 20 and to bring the side wall 10 into position overlying the liner side wall 19. The carton remains in this folded condition until it is used.

The top and bottom ends of the closure are folded in the conventional manner by folding the end wall closure flaps 27 and 30 of the bottom closure and closure flaps 33 and 35 of the top closure into a common plane, and folding the side wall closure flaps into face contact outwardly of the first folded flaps. During the process of squaring up the carton, the partition panel 47 is folded into right angular relation to the side walls and in parallel relation to the end walls of the carton. The partition flap is anchored to the side wall 12 of the outer shell so as to prevent the outward bowing thereof. The adhesive area 63 connects the side wall 10 to the liner panel 19 along the fold line 52 which connects the partition flap to the liner panel 19, and therefore a direct connection is provided between the outer side walls of the carton.

The structure shown in FIGURE 9 of the drawings is very similar to the structure described with the exception of the fact that the aperture 56 in the liner panel 21 is omitted. In this arrangement, the partition wall 47 connects the side walls 19 and 21 of the liner, the anchoring flange 49 being adhered to the inner surface of the panel 21.

In accordance with the patent statutes, we have described the principles of construction and operation of our improvement in pour-spout cartons; while we have endeavored to set forth the best embodiment thereof, we desire to have it understood that obvious changes may be made within the scope of the following claims without departing from the spirit of our invention.

We claim:

1. A paperboard carton blank including:
- an outer shell including a series of alternately arranged side and end walls hingedly connected along parallel fold lines,
- top and bottom closure flaps secured to said walls along parallel lines of fold,
- a liner hingedly connected to an end wall of said series and including alternately arranged side and end walls adapted to fold inwardly of the corresponding side and end walls of the outer shell in face contact therewith,
- a partition structure formed in one of said side walls of said liner and including a partition panel of a width substantially equal to the width of said liner end walls, and an anchoring flange hinged to the free end of said partition panel,
- said partition structure being defined by a generally U-shaped cut line having its ends terminating substantially on the vertical center line of the said one side wall, and by a vertical fold line connecting the ends of said U-shaped cut line.

2. The blank of claim 1 and in which the other side wall of said liner is provided with an aperture adapted to register with said partition structure when said other side wall is folded to overlie an adjoining end wall and a portion of said one side wall.

3. The structure of claim 1 and in which the one end wall of said outer shell which is between the two side walls thereof is provided with a line of separation parallel to the top and bottom edges of said one end wall extending across the one end wall, and including diagonally extending weakened lines of separation in said outer shell side walls from the ends of said line of separation in said one end wall to the upper edges of said outer shell side walls, and registrable score lines extending across the top closure flaps of said outer shell closure flaps between the upper ends of said weakened lines of separation.

4. The structure of claim 3 and in which said weakened lines of separation in said outer shell side walls are formed by a cut score line extending into the paperboard from the inner surface of the same, and a second side by side cut score line extending into the paperboard from the outer surface thereof, the second cut score line being below the first.

5. A paperboard carton including an outer shell having spaced parallel side walls and spaced parallel end walls connected in series tubular relation,
- a carton liner connected to an end wall of said series including parallel side walls in face contact with the side walls of said outer shell and an end wall in face contact with the inner surface of one of said end walls between the side walls of said outer shell,
- a line of separation extending across said one end wall of said outer shell in spaced parallel relation to the upper edge thereof,
- closure flaps on said side and end walls of said outer shell and secured in face contact to provide a top closure,
- weakened lines of separation extending diagonally across the upper corners of said outer shell side walls adjoining said one outer shell end wall from the ends of said line of separation in said one side wall to

opposed points on the upper edges of said outer shell side walls,

said weakened lines of separation being defined by first cut score lines extending partially through the paperboard in the inner surface thereof, and second a side by side cut score line extending partially through the paperboard from the outer surface thereof, and,

a line of fold extending across said side wall closure flaps between said opposed points,

a partition structure formed in one of said side walls of said liner and including a partition panel of a width substantially equal to the width of said liner end walls, and an anchoring flange hinged to the free end of said partition,

said partition structure being defined by a generally U-shaped cut line having its ends terminating substantially on the vertical center line of the said one side wall, and by a vertical fold line connecting the ends of said U-shaped cut line.

6. The structure of claim 5 and in which the second cut score line is below the first cut score line.

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