

Aug. 28, 1951

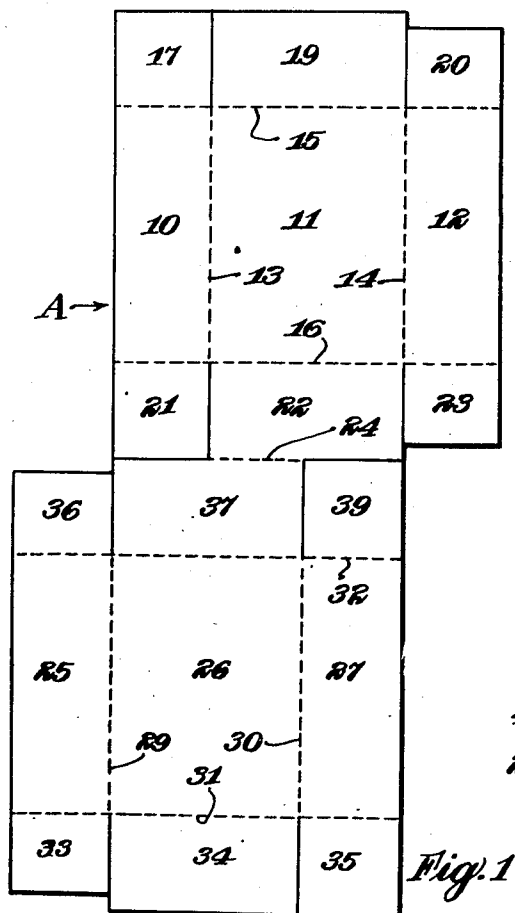
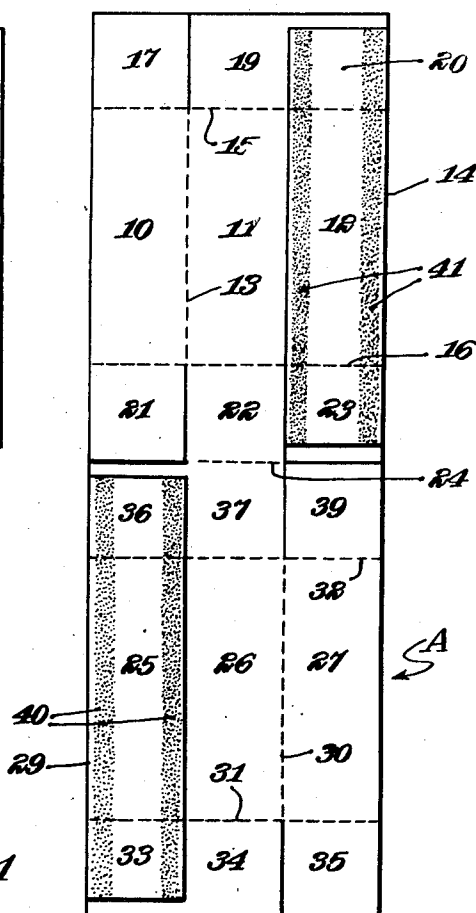
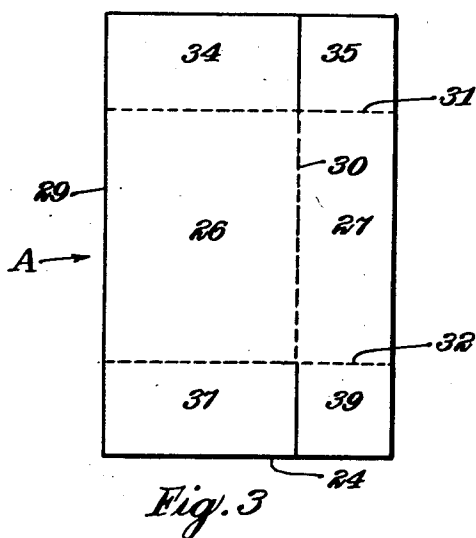
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2,565,682

ONE-PIECE REINFORCED CARTON

Filed June 19, 1946

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

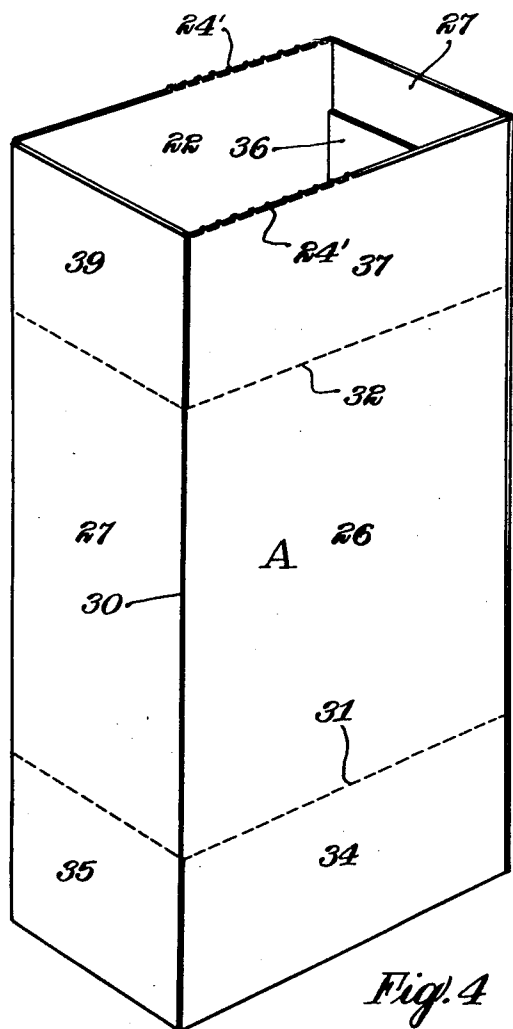


Fig. 4

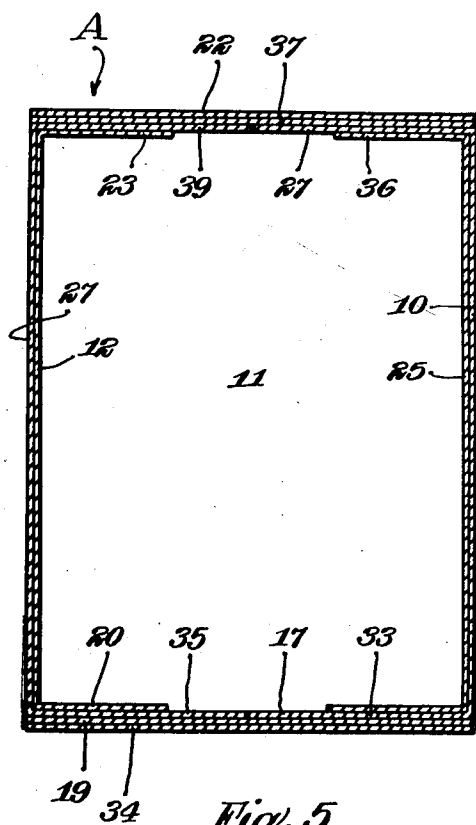


Fig. 5

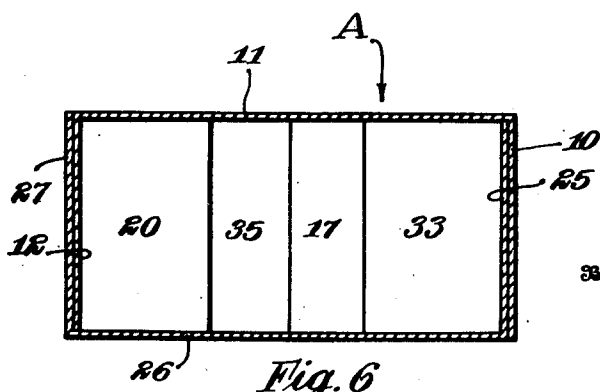


Fig. 6

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UNITED STATES PATENT OFFICE

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ONE-PIECE REINFORCED CARTON

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8 Claims. (Cl. 229-16)

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My invention relates to an improvement in one piece reinforced carton wherein it is desired to provide a carton formed of one piece of material having opposed reinforced side walls.

In the formation of cartons, it is often desirable to produce the carton out of light carton stock, but at the same time it is often necessary that the carton possess considerable stacking strength. Cartons of the Brightwood type have such reinforced side walls as two opposed side walls of such cartons are of double thickness. However, cartons of this type must be set up in a customer's establishment, as they will not fold flat for shipping or transportation.

It is desirable to provide a carton which will fold flat for shipping purposes and which at the same time is provided with opposed walls of double thickness. The present invention is designed to provide such a tubular carton.

An object of the present invention is to provide a carton which may be adhered in tubular relationship, and which is provided with closing flaps at opposite ends thereof which may be sealed to enclose a product. While such cartons are simple to manufacture having adjacent walls of double thickness, it has been difficult to produce such cartons with opposed walls of double thickness and with the alternate walls of single thickness.

A feature of the present invention lies in the provision of a carton formed of two sections, each of which includes an intermediate panel and a pair of connected side panels and to terminally connect these sections in such a way that they may be folded into contiguous relationship. At the same time the sections are so arranged as to be off-set one from the other to permit the application of glue to the necessary walls by means of ordinary gluing equipment. After the sections have been folded into contiguous relationship the foldable connection between the two sections is broken, thus allowing the two sections to expand into rectangular relationship.

These and other objects and novel features of my invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of my specification:

Figure 1 is a diagrammatic view of the carton blank from which my carton is formed.

Figure 2 illustrates the blank of Figure 1 in the first folded position thereof.

Figure 3 is an additional view of the carton blank showing the next successive folded position of the carton.

Figure 4 is a perspective view of the carton in

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tubular form before the ends thereof are sealed.

Figure 5 is a vertical section through the carton after the same has been sealed.

Figure 6 is a transverse section through the carton.

The carton A is formed as best illustrated in Figure 1 of the drawings. The carton blank includes a side wall portion 10, a rear wall portion 11 and a side wall portion 12 connected along substantially parallel fold lines 13 and 14. A pair of fold lines 15 and 16 intersect the fold lines 13 and 14 at substantially right angles and form upper and lower extremities for the panels described. The top closing flaps 17, 19, and 20 are connected to the panels 10, 11 and 12, respectively, along the fold line 15. Similarly bottom closing flaps 21, 22, and 23 are connected to the lower edges of the panels 10, 11 and 12 along the fold line 16.

The structure thus described comprises one section of the carton. The other section of the carton is foldably connected to the previously described section along the line of fold 24, which acts to connect a portion of the free edge of the flap 22 to a portion of the free edge of a similar flap of the second carton section.

The second carton section includes panels 25, 26, and 27 foldably connected together along substantially parallel fold lines 29 and 30. The upper and lower edges of these panels are defined by a pair of substantially parallel fold lines 31 and 32 which preferably intersect the fold lines 29 and 30 at right angles. Closing flaps 33, 34, and 35 are connected to the upper edges of the panels 25, 26 and 27 along the fold lines 33, 34, and 35. Closing flaps 36, 37 and 39 are connected to the panels 25, 26 and 27, respectively, along the fold line 32. The fold line 24 is provided between portions of the free edges of the sealing flaps 22 and 37.

The line of connection 24 is defined as a fold line. In the event the two sections of the carton are later separated by a cutting operation, the connection 24 may comprise a simple line of fold. However, if the carton sections are later to be separated by merely expanding the two walls 11 and 26 apart, the line 24 should comprise a partially broken line of separation which may comprise spaced perforations, a cut score, or a single elongated perforation between two short connecting areas.

It will be noted that the panel 11 is off-set from the panel 26 a distance substantially equal to the width of the panel 10. When a carton of the paste end type is flattened for shipment or

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the like the panels corresponding to the panels 11 and 26 of the tubular carton will be similarly off-set. The purpose of off-setting the two sections is to permit the proper folding and gluing operation and also to produce a flattened tubular carton which may be expanded into rectangular shape.

In order to form the carton A, the wall panel 25 together with its sealing flaps 33 and 36 are coated with a suitable adhesive as indicated at 40 and this panel is folded relative to the panel 26 along the line 29 until the panel 25 is superimposed upon the panel 26 as illustrated in Figure 2 of the drawings. The panel 12 is also provided with adhesive as indicated at 41 and this panel 12 is folded along the fold line 14 to overlie a portion of the panel 11. The closing flaps 20 and 23 connected to the panel 12 fold in position to overlie portions of the flaps 19 and 22, respectively, as illustrated in Figure 2 of the drawings.

The next step in the procedure of folding the carton lies in folding the same along the line of connection 24. As a result the adhesive 40 adheres the panel 10 to the panel 25 and adheres the flaps 17 and 33, respectively, in superimposed relation and the flaps 21 and 36 in superimposed relation. This folding action also causes the adhesive 41 to adhere the panels 12 and 27 together and adhere the flap 20 to the flap 35 and the flap 23 to the flap 39. At the end of this folding operation the carton appears as illustrated in Figure 3 of the drawings.

The carton blank may then be trimmed along its lower edge to remove the connection 24, or the line of connection may be broken apart as by forcing the carton into rectangular shape as illustrated in Figure 4. In Figure 4 the carton is inverted from the position shown in Figure 3, the former line of connection 24 being indicated by the numeral 24'.

In the construction illustrated the side wall panels of both sections are provided with closing flaps at both ends thereof. The purpose of this construction is to provide a double thickness web on both sides of the fold line so that the opposed closing flaps on the reinforced sides of the carton will fold with some resistance. As a result when the remaining closing flaps of the carton are folded to overlie or underlie the opposed flaps on the reinforced walls, considerable inward pressure may be applied thereto without causing these opposed flaps to fold into the interior of the carton.

For example in Figure 5 of the drawings I disclose a foldable section through the carton in sealed condition thereof. It will be noted that the flaps 23 and 39 which are connected together by means of the adhesive 41 are bent at right angles to the side wall panels 12 and 27 to which they are foldably connected. Because of the double thickness of the stock at this point these flaps 23 and 39 have a tendency to remain in upstanding position and accordingly exert an upward force against the overlying flaps 22 and 37. Similarly the flaps 36 and 27 are connected together and issue from the wall panels 10 and 25. The folding of these flaps in unison is resisted by the double thickness of the flaps and accordingly tend to remain in upstanding position, thus exerting an upward force against the overlying flaps 22 and 37.

Similarly the flaps 20 and 35 are connected together and issue from the panels 12 and 27. As a result these combined flaps resist pivotal move-

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ment to right angles relative to the panels and tend to stay in alignment therewith. Thus a downward pressure is exerted against the flaps 34 and 19 which underlie the same.

The flaps 17 and 33 are connected together and issue from the side wall panels 10 and 25 and therefore resist folding into the position shown in Figure 5. These flaps therefore exert a downward pressure against the flaps 19 and 34 or hold these flaps in proper relation until suitable adhesive has been applied to seal the flaps in overlying relationship.

It will be noted that the carton A may be formed of relatively light stock and is still possessed with considerable resistance to crushing due to the double thickness end walls of the carton. The closing flaps will seal successively due to the relatively light thickness of the stock, but this seal will not result from a sacrifice in the compressive strength of the carton.

In accordance with the patent statutes, I have described the principles of construction and operation of my one piece reinforced carton and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A carton blank designed to form a tubular collapsible carton comprising a pair of sections each section comprising an intermediate panel and a pair of side wall panels foldably connected thereto along substantially parallel fold lines, closing flaps hingedly secured to certain of said panels including said intermediate panels along fold lines intersecting said first named fold lines at substantially right angles thereto, and a line of connection connecting a closing flap on the intermediate panel of one section with a closing flap on the intermediate panel of the other section, the fold lines connecting said intermediate panels to said side wall panels being out of alignment and off-set one from the other.

2. A carton blank designed to form a tubular collapsible carton comprising a pair of sections, each section comprising an intermediate panel and a pair of side wall panels foldably connected thereto along substantially parallel fold lines, closing flaps hingedly secured to certain of said panels including said intermediate panels along fold lines intersecting said first named fold lines at substantially right angles thereto, and a line of connection connecting a closing flap on the intermediate panel of one section with a closing flap on the intermediate panel of the other section, the edges of said intermediate panels connected to said side wall panels being off-set one from the other, the length of off-set being substantially equal to the width of said side wall panels.

3. A carton blank designed to form a tubular collapsible carton comprising a pair of carton sections, each section including a relatively wide intermediate panel and a pair of relatively narrow side wall panels foldably connected thereto along substantially parallel fold lines, end closing flaps on said intermediate panels, a line of connection connecting a closing flap of one section with a closing flap of the other section, the intermediate panel of one section as well as its closing flap having one edge thereof flush with the free edge of a side wall panel of the other section.

4. A carton blank including a pair of aligned sections pivotally connected together along a cen-

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ter line of fold, each of said sections including an intermediate panel and a pair of side wall panels foldably connected to opposite edges thereof along parallel lines of fold at right angles to the center line of fold, closing flaps connected to an end of each of said intermediate sections along fold lines parallel to said center line of fold, said closing flaps having said center line of fold therebetween, said intermediate panels being bodily off-set so that the parallel lines of fold connecting one intermediate panel with its side wall panels are laterally off-set in the same direction from the corresponding parallel lines of fold connecting the other intermediate panel to its side wall panels, one of said side wall panels on one of said intermediate panels projecting beyond the corresponding side wall panel of the other section, and the other side wall panel of the other section projecting beyond the corresponding side wall panel of the first named section.

5. The structure described in claim 4 and including end closure flaps on certain of said side wall panels.

6. A carton blank including two off-set sections connected along a central line of fold, each of said sections including an intermediate panel and side wall panels connected along opposite edges thereof along parallel fold lines arranged at right angles to said central line of fold, said intermediate panels having closing flaps hingedly connected thereto along fold lines parallel to said central line of fold, said flaps being connected

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together along said center line of fold between the two sections, said intermediate panels being off-set to such an extent that when one side of one panel is folded upon its intermediate panel and when the opposite side wall panel of the other intermediate panel is folded upon its intermediate panel, the side wall panels of one section will overlap the side wall panels of the other section when the blank is folded along said center line of fold.

7. The structure described in claim 6 and including closure flaps on certain of said side wall panels.

8. The structure described in claim 6 in which the center line of fold comprises a perforated line.

REYNOLDS GUYER.

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