

Oct. 19, 1943.

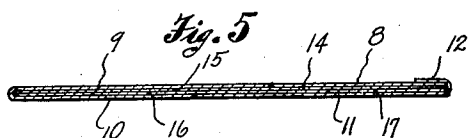
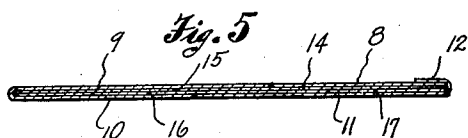
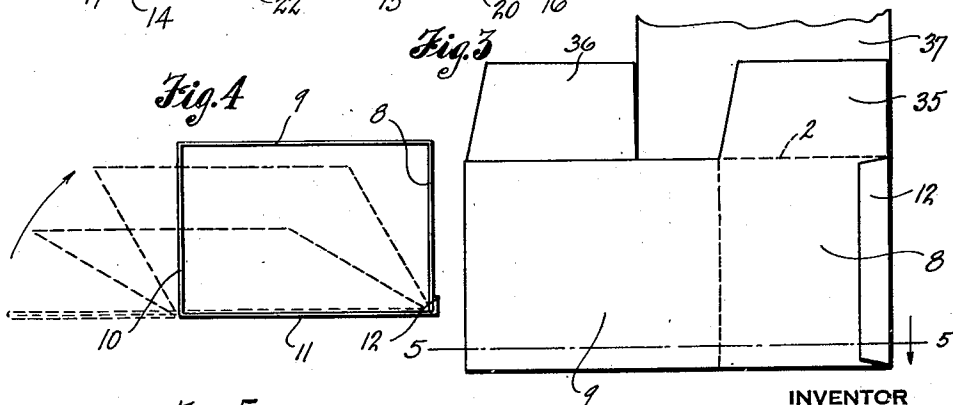
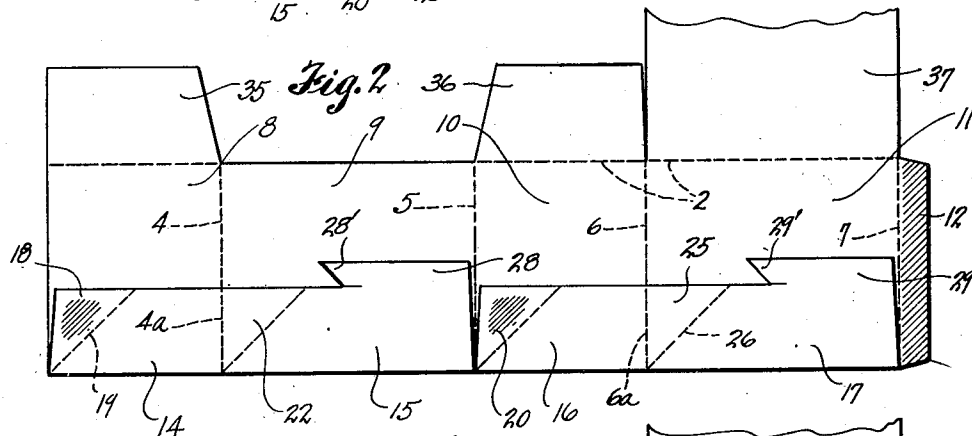
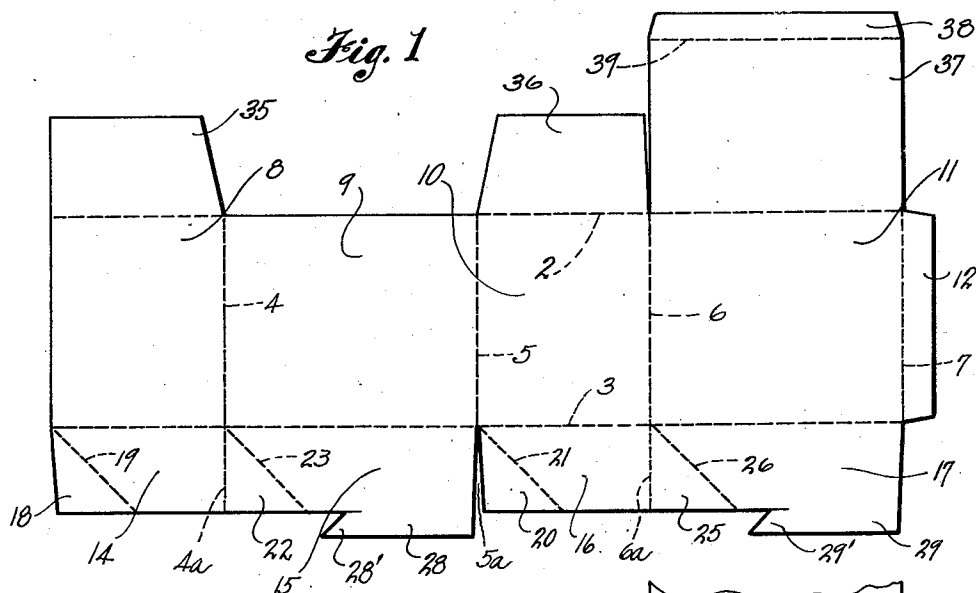
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2,332,250

CARTON

Filed March 23, 1942

2 Sheets-Sheet 1

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2 Sheets-Sheet 2

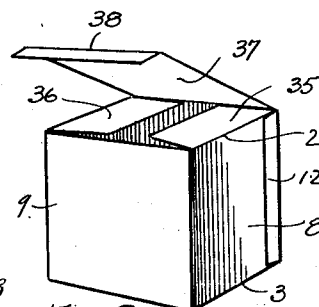
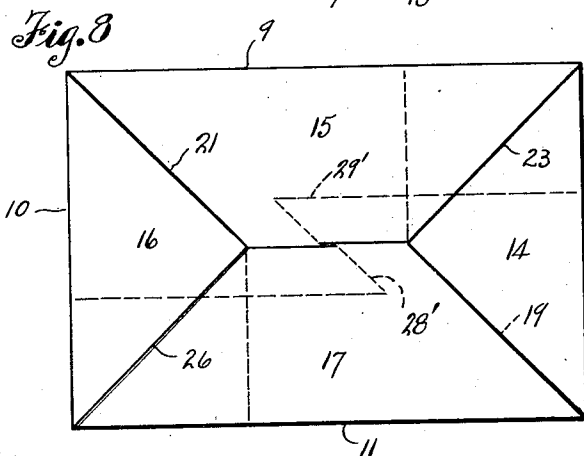
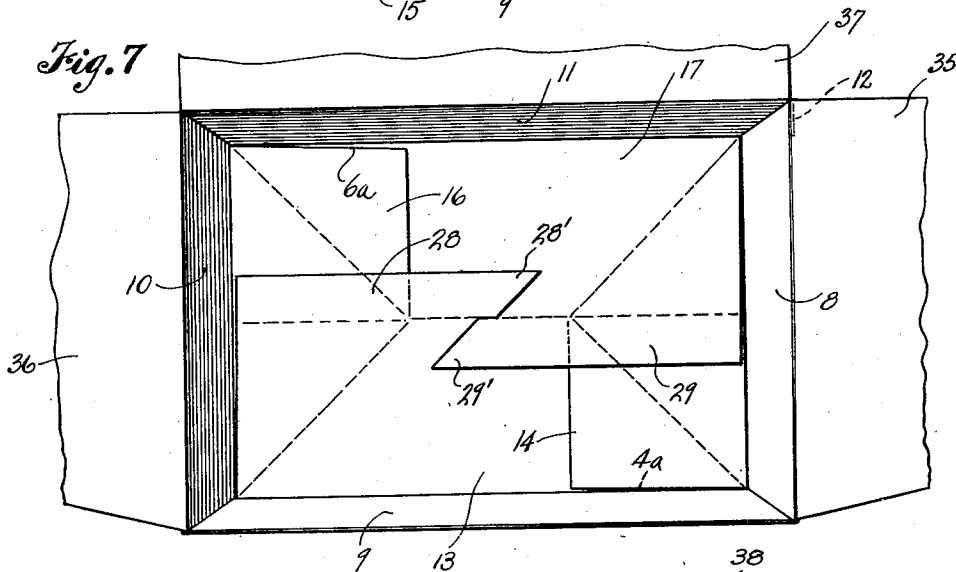
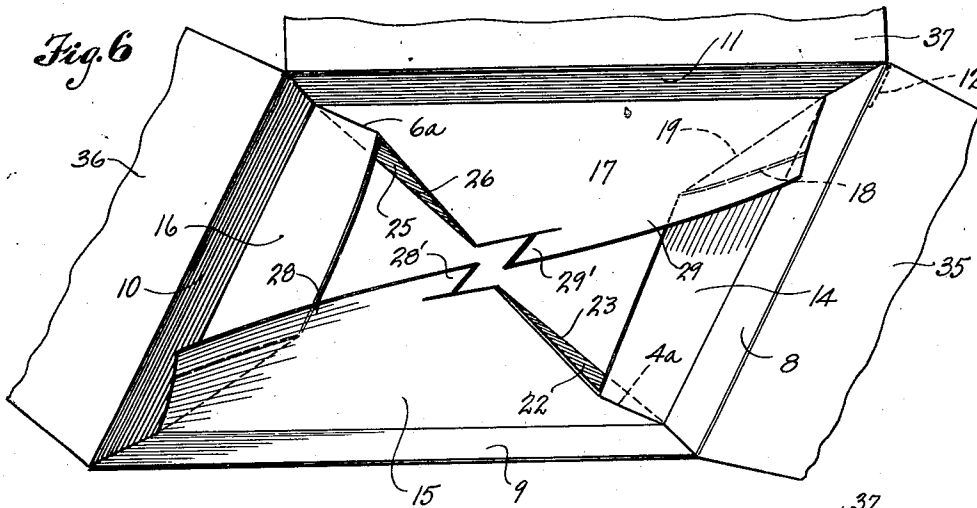


Fig. 9

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2,332,250

CARTON

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Application March 23, 1942, Serial No. 435,784

4 Claims. (Cl. 229—41)

This invention relates to improvements in cartons as made from cardboard, paper, or other suitable materials, but which will hereinafter be referred to as cardboard for convenience in description. The invention has reference more particularly to cartons of that kind, each made from a single, preformed cardboard blank which is so cut, scored, folded and glued that the formed or finished carton may be retained in a flat, collapsed condition prior to use, then easily and quickly erected to its intended rectangular or box-like form at the time of its use without requiring any additional folding or joining of parts to make it usable.

It is the principal object of this invention to provide a carton of the character above stated, comprising a single piece body blank, having a longitudinal area of a predetermined width extending from end to end, and transversely scored to define the four side wall panels of a rectangular carton body, and which blank, after being cut and scored for the making of the carton, is folded upon itself at a medial transverse line, and its ends permanently joined, thus to provide for a quick and ready opening of the collapsed carton body to its intended rectangular form without requiring the subsequent interlocking or joining of ends; said blank also having bottom wall forming portions of novel form, integral with the lower edges of the side wall forming panels and continuing downwardly therefrom, and adapted to be folded back in a manner to lie flatly against the inside faces of the body wall panels to which they are attached and to be enclosed within the collapsed carton flatly against the side walls when the blank is folded upon itself for the uniting of its ends.

It is also an object of this invention to so form, score, and join those parts that are to form the bottom wall of the erected carton that, when the flat, collapsed carton is opened up to its erected or open condition, these bottom forming parts will be caused to swing automatically from vertical positions against the side walls into a horizontal plane, and by reason of their particular formation and connection, caused to interlockingly engage to insure completeness of closure and adequacy of support for the contents of the carton.

Still further objects of the invention reside in the novel manner of scoring of the coating bottom wall forming portions; in their novel relationship to each other when the carton is collapsed, and in the provision for adhesively connecting certain parts so that the opening action

or erection of the carton effects the automatic engagement of those parts that are intended to interlock.

Still further objects of the present invention reside in the details of construction of the blanks, and in the method of scoring, folding, joining and erecting the collapsed cartons, as will hereinafter be fully described.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Fig. 1 is a plan view of a blank as prepared for the formation of a carton according to and embodying the objects of the present invention.

Fig. 2 is a view illustrating the initial step in the folding of the prepared blank, to form a carton therefrom.

Fig. 3 is a similar view, illustrating a subsequent step in the folding of the blank, and showing the blank as folded back upon itself at a transverse, medial line for the uniting of the opposite ends of the blank.

Fig. 4 is a view illustrating the manner of opening the collapsed carton.

Fig. 5 is a cross section on line 5—5 in Fig. 3, illustrating the relationship of panels and flaps when the carton is collapsed.

Fig. 6 is a perspective view, looking down into the carton when partly opened up and particularly showing those parts of the bottom wall structure that become interlocked when the carton is fully opened.

Fig. 7 is an outside view of the lower end wall of the carton.

Fig. 8 is a perspective view looking down into the open carton.

Fig. 9 is a perspective view of the finished carton as erected.

Referring more in detail to the drawings—

In Fig. 1, I have shown a cardboard blank as cut and scored, or creased, for the making of a flat collapsed carton according to the present invention. This blank, designated in its entirety by reference numeral 1, is here shown as being of an elongated form, although the length and width will vary in accordance with the change of dimensions or proportions of the cartons to be made. The blank has spaced, parallel lines of scoring, 2 and 3, the full length thereof, defining the top and bottom boundaries of a medial, longitudinal strip extending from end to end of the blank.

The transverse distance between the lines 2

and 3 determines the height of the carton and defines the top and bottom limits of the side wall panels. At predetermined intervals, measured lengthwise of the medial, longitudinal strip set off between the lines 2 and 3, are transverse lines of scoring, indicated respectively by reference numerals 4, 5, 6 and 7. The lines of scoring 4, 5 and 6 form hinge connections for the four side wall panels designated at 8, 9, 10 and 11. The line of scoring 7 sets off a narrow end flap 12 at one end of the blank.

The panels 8 and 10, which are of like dimensions, form two of the opposite side walls of the carton body and the panels 9 and 11, which are of the same dimensions, likewise form the other two opposite side walls of the carton body. The end flap 12 is provided as a means for connecting the ends of the blank to form the carton body, as will presently be explained.

Integral with the main body portion of the blank, and continuing therefrom below the line of scoring 3, are the bottom wall forming flaps 14, 15, 16 and 17 which are hingedly attached to the panels 8, 9, 10 and 11, respectively, by reason of the longitudinal line of scoring 3. The flaps 14 and 15 are integral with each other, but are set off one from the other by a line of scoring 4a that is an extension of or continuation of line 4 which divides the panels 8 and 9. Likewise the flaps 16 and 17 are integral, but are set off, one from the other, by a line of scoring 6a which is a continuation of line 6 that divides the panels 10 and 11. The flaps 15 and 16 are separated by a cut or slot 5a which extends perpendicularly to the line 3 and terminates at that line.

The flaps 14 and 16 each are of rectangular form, and extend the full width of the corresponding side wall panel to which each is hingedly attached, and their widths, measured perpendicular to line 3, are about one-third the width of the panels 9 and 11 measured lengthwise of the blank. The flap 14 has a triangular, outside corner portion 18 set off by a diagonal line of scoring 19. The line of scoring 19 extends at an angle of 45° to the line 3, and through the point of intersection of the line 3 with the end edge of the blank.

The flap 16, likewise, has a triangular corner portion 20 set off by a diagonally directed line of scoring 21, which line of scoring is at an angle of 45° to the line 3 and passes through the point of intersection of lines 3 and 5.

The flaps 15 and 17 are alike in dimensions, each extending the full width of the wall panel to which it is attached; the flaps 14 and 15 being joined along the hinge line 4a while flaps 16 and 17 are joined along the hinge line 6a. Each flap, 15 and 17, has a width, measured perpendicular to line 3, that is more than half the width of the panels 8 and 10, so that they will overlap in the finished and erected carton.

The flap 15 has a triangular corner portion 22 set off by a diagonal line of scoring 23, and the line of scoring 4a. The line of scoring 23 is at an angle of 45° to the line 3 and passes through the point of intersection of lines 4 and 3. Likewise, the flap 17 has a triangular portion 25 set off by a line of scoring 26 that forms an angle of 45° with line 3 and passes through the point of intersection of lines 6 and 3.

The flaps 15 and 17 are formed respectively with corner extension portions 28 and 29 forming hooks 28' and 29'. These hooks are located, each half-way between the opposite side edges

of the flaps for a purpose which will presently be apparent.

At the top edge of the blank, closure flaps 35, 36 and 37 extend from the top edges of the panels 8, 10 and 11. The flaps 35 and 36 each has a width somewhat more than half the width of panels 9 and 11 and the flap 37, which in the closed carton forms the outer closure member, has a width, measured perpendicular to line 2, that corresponds to the width of the panels 8 and 10, measured parallel to line 3, and at its free edge has a narrow flap 38 set off by a line of scoring 39.

Assuming the blank to be so cut, and scored, the formation of the carton therefrom is as follows:

First, all the flaps, 14, 15, 16 and 17 are folded along the line of scoring 3 back against the inside faces of the wall panels to which they are attached, so that they will assume the position and relationship to the body portion of the blank that has been illustrated in Fig. 2.

The second step in the preparation of the blank is the application of an adhesive to exposed top areas of the triangular portions 18 and 20 and the attaching strip 12, such an application of adhesive being indicated by the diagonal line shading on these parts in Fig. 2.

Then, as the third step in the formation of the carton, the blank is folded along the transverse line of scoring 5, back upon itself so that the flaps 14 and 15 will flatly overlie the flaps 17 and 16 respectively, and thus these parts, which are to comprise the bottom of the carton, will be enclosed within the side wall panels of the carton body. When the blank is thus folded upon itself, the end edge which is at the left-hand side in Fig. 1, will coincide with the line of scoring 7 at the right hand edge, leaving the flap 12 projecting beyond the edges. Then the flap 12 is folded back over the outside face of the adjacent edge of panel 8 and all parts are then pressed flatly together to insure the adhesive connection of the triangular tab 18 with the flap 17 adjacent its end edge, and to insure the adhesive connection of the triangular tab 20 with the adjacent edge portion of flap 15. Also, to insure the permanent uniting of the end portions of the blank by the flap 12.

After the blank has thus been folded and the parts adhesively united, the carton may remain in this collapsed, flat condition for easy storage and handling until time of use; it being understood that it is then ready for erection and use without additional securement of parts.

To erect the carton, the body portion is opened up to a rectangular, right angular form, as has been illustrated by its showing in Fig. 4. This is accomplished by swinging the panel 9 away from the plane of the panel 11; the panel 9 passing successively through the dotted line positions to the full line position which shows the rectangular form of the opened carton. Prior to opening the carton body, the bottom wall forming flaps 14, 15, 16 and 17 will lie flatly against the inside surfaces of the side wall panels, as will be understood by reference to Fig. 5, but, incident to swinging the side wall panel 9 away from the line of panel 11, the flaps 15 and 17 will be caused to swing toward each other at their top edges and at the same time to move the oppositely facing hook portions 28' and 29' toward each other and finally cause them to move into inter-engaging contact. This inward swinging of the flaps 15 and 17, with the hooked portions, is caused by

reason of the fact that when the body forming panels 10 and 11 are moved hingedly about the line of connection 6, from the alinement in which they are shown in Fig. 5, toward the right angle position of the opened carton, this causes the hinging of the triangular tab 25 along the scored lines of connection 26 and 6a and incidentally swings the flap 17 downwardly. The same movement of the flap 15 relative to the panel 9 is caused to take place by reason of the connection effected between flaps 14 and 15 through the triangular tab 22. Thus, as the opening of the carton continues, the flaps 15 and 17 swing downwardly to horizontal position, and as they swing down, they move endwise toward each other to finally cause the interlocking of the hooks 28' and 29' as seen in Fig. 8. The interlocking of these hooks, together with the fact that the outer ends of the flaps 15 and 17 rest upon the underlying downfolded flaps 14 and 16, insures adequate support for the bottom wall parts.

After the carton has been erected, it will retain its erected, rectangular form so long as the bottom wall is in horizontal position. The carton may then be closed by folding the two flaps 35 and 36 inwardly, then folding the closure flap 37 over the flaps 35 and 36 and tucking the end flap 38 into the carton within the top edge portion of the wall panel 9.

Cartons of this particular construction may be expeditiously and economically manufactured in the flat and shipped to points of use in collapsed, flat condition, and erected at the time of use. Their particular advantage resides in the fact that the bottom sections of the carton will automatically move into functional position upon opening the carton, and when interlocked, will afford adequate and substantial support for the contents of the carton. Furthermore, the interlocked bottom sections retain the carton against collapse.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is:

1. A box body blank having a longitudinal line of scoring defining the bottom edge of the four side wall panels of a rectangular carton, and having lines of scoring transversely thereto at a medial line and along lines between the ends of the blank and said medial line, to foldably join the four side wall panels in edge to edge series; said blank also including two bottom wall forming flaps, separated along the extended line of the medial transverse line of scoring, and extending below the said longitudinal line of scoring and foldable back along said line to lie flatly upon the inside faces of the side wall panels; said flaps, at corresponding ends, each having a diagonal line of scoring defining a foldable corner tab, and each flap also being scored to permit an overlapping fold thereof at a location alined with the scoring separating the two wall panels from which the flap extends; and said body blank being foldable back upon itself at its medial transverse

line, after said flaps have been folded there-against to enclose the latter and to bring the ends of the blank into coincidence for hinged connection and to engage said flaps flatly together for the adhesive attachment of the corner tab of each flap to the opposite end portion of the other flap.

2. A box body blank, as in claim 1, formed at one end with a flap adapted to be adhesively affixed to the other end portion of the blank, and wherein the said bottom wall flaps are equipped with portions adapted to be moved into overlapping and interengaging connection by the hinging movement of the side walls from parallel to right angular relationship.

3. A blank as recited in claim 1 wherein the diagonal lines of scoring, that set off the foldable corner tabs of the said bottom wall forming flaps, extend at angles of 45° to the said longitudinal line of scoring and intersect the said line even with the ends of their corresponding flaps, and wherein the scoring for the overlapping fold in each flap comprises one line formed as an extension of the line of scoring which hingedly joins the two wall panels from which the flap extends and another line formed in the flap at an angle of 45° to the longitudinal line and passing through the point of intersection of the longitudinal line and the score line just mentioned.

4. A box body blank for the formation of a rectangular carton scored longitudinally to define the top and bottom edges of the four side wall panels and scored transversely at a medial line and along lines between said medial line and the opposite ends of the blank to define and hingedly join the side wall panels in edge to edge series; said blank also including two bottom wall forming flaps, separated along the line of extension of the medial transverse hinge line of the blank and extending from the wall panels below the said longitudinal line of scoring and foldable back along said line flatly against the wall panels; said flaps, at corresponding ends, each having a diagonal line of scoring, defining a foldable outer corner glue tab, and each flap having an extended lower edge portion forming a laterally facing hook, and each flap being scored to permit a right angle bend to be made therein at the junction line of the two wall panels from which the flap extends; said body blank being foldable back upon itself at the medial transverse line of scoring, after the flaps have been folded there-against to enclose the flaps and join them by the glue tabs, and having an extension glue flap at one end for hinged connection of the blank ends; said bottom forming flaps being adapted to be moved hingedly to horizontal position through the glue tab connection, when the carton side walls are adjusted to open position, to engage said hook portions in overlapping, inter-hooked connection, and thus close the bottom of the carton.

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