

April 18, 1939.

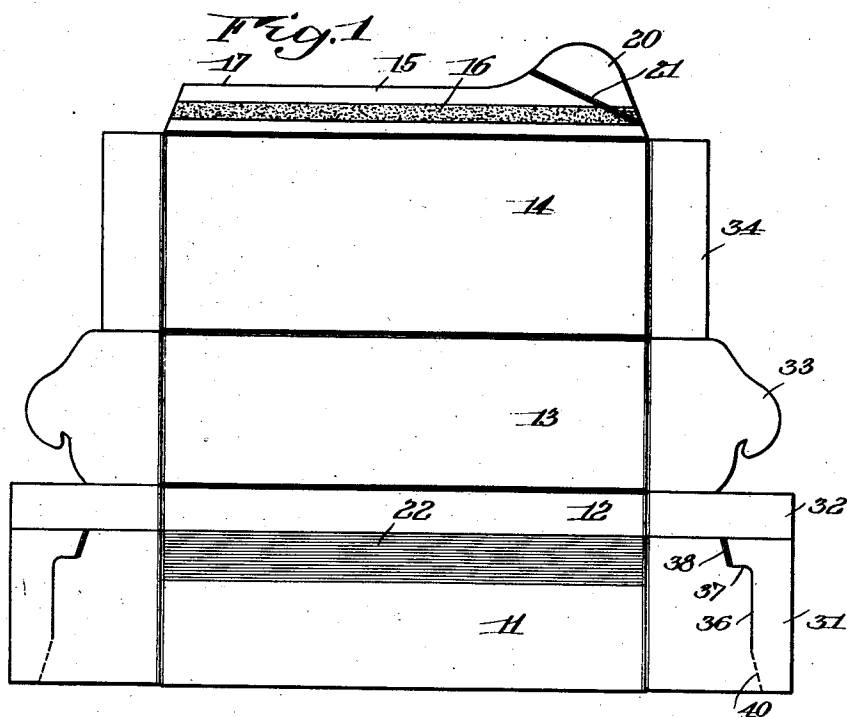
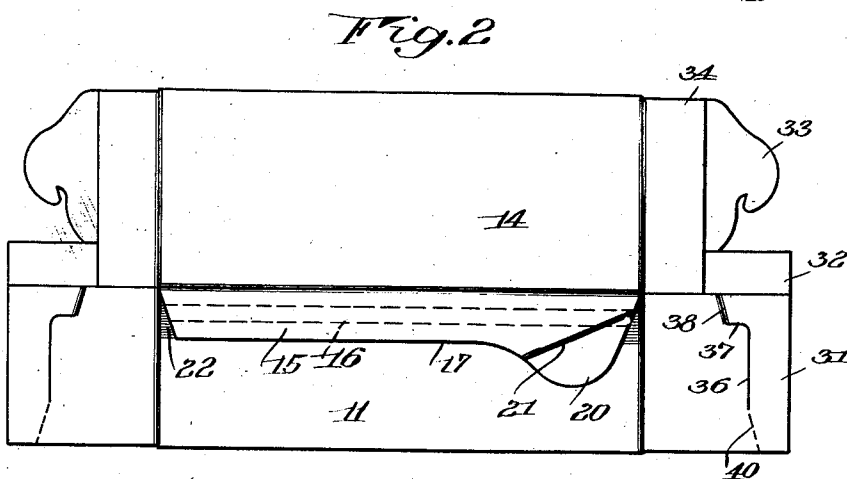
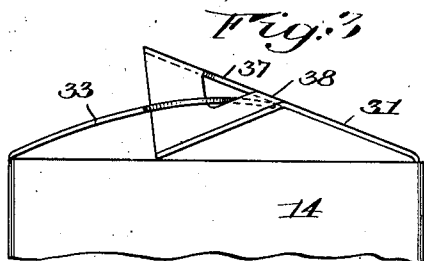
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2,154,475

CARTON CONSTRUCTION

Filed April 10, 1936

2 Sheets-Sheet 1



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CARTON CONSTRUCTION

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2 Sheets-Sheet 2

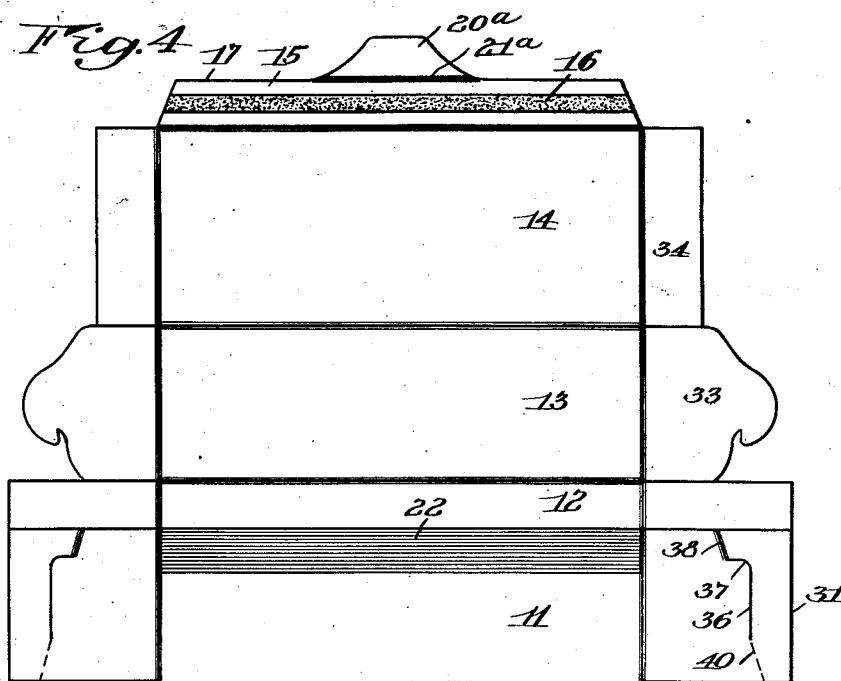
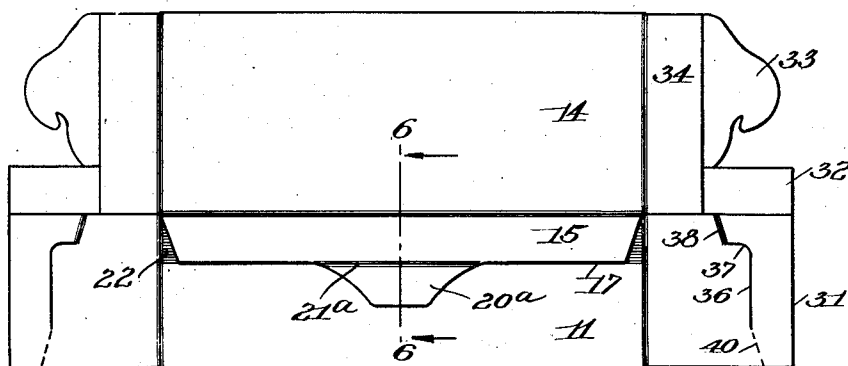
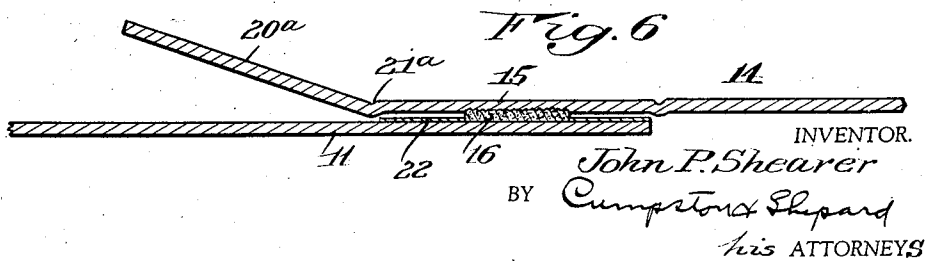


Fig. 5



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UNITED STATES PATENT OFFICE

2,154,475

CARTON CONSTRUCTION

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Application April 10, 1936, Serial No. 73,705

11 Claims. (Cl. 229—51)

This invention relates to cartons made of paper or fiber board, and particularly to cartons of the type adapted to be pulled or torn apart in order to obtain free access to all sides of the contents. Such cartons are particularly useful in packing ice cream, for example, as the tearing apart of the carton permits the ice cream to be removed as a solid block or brick, instead of having to dig it out bit by bit from a carton open at only one side.

An object of the invention is the provision of a generally improved and more satisfactory carton of the tear-apart type.

Another object is the provision of a tear-apart carton with a pulling tab so placed as to reduce the possibility of tearing the carton in an undesired manner.

A further object is the provision of improved carton closure flaps so designed as to facilitate the rapid assembly of the flaps into closed relationship.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is a view of a carton constructed in accordance with a preferred embodiment of the invention, illustrating it at a preliminary stage of its manufacture;

Fig. 2 is a view of the same carton in its completed knocked-down form;

Fig. 3 is a view of one end of the carton in erected position, showing the closure flaps in the act of being closed;

Fig. 4 is a view similar to Fig. 1 illustrating a modified form of construction;

Fig. 5 is a view similar to Fig. 2 illustrating the same modified form of construction; and

Fig. 6 is a section taken substantially on the line 6—6 of Fig. 5.

The same reference numerals throughout the several views indicate the same parts.

The exact shape, size, or form of the main body portion of the carton is immaterial so far as the present invention is concerned. The carton may be made, for example, of a single integral piece of paper or fiber board cut and scored to provide panels 11, 12, 13, and 14, to form the four sides of a carton of rectangular cross-section when erected, and a flap 15 to overlap the panel 11 and to be adhesively secured thereto to hold the carton together. Suitable end flaps may also be provided for closing the ends of the carton. In

both figures of the drawings, the panel 11 is shown folded down over the panel 12, in the position assumed by these parts during the final steps in the manufacture of the carton.

The adhesive for connecting the flap 15 to the panel 11 may be initially applied to one or the other of these overlapping parts (preferably to the part 15 along a zone indicated diagrammatically at 16, this adhesive zone being relatively close to and substantially parallel to the edge 17 of the flap 15. The adhesive may be applied in a solid strip throughout this zone, or in a discontinuous or irregular strip, or in any other desired form. The joint formed by the overlapping members 11 and 15 and the adhesive 16 is arranged to be broken or torn apart when desired, so that the carton may be opened up flat (after the end flaps are opened) to obtain free access to the contents.

Paper or fiber board, such as is used in the manufacture of such cartons, has a perceptible grain in one direction, and has appreciably greater compressive strength in a direction along the grain than in a direction transverse thereto. It is preferred to cut the carton blank so that the grain runs in a direction around the carton rather than in a direction lengthwise thereof, since this gives a somewhat stronger carton. But this has one disadvantage, because the fibrous material tears more readily in the direction of the grain than in a direction across the grain. Hence, if the grain runs around the carton, or in a direction substantially perpendicular to the edge 17 and adhesive zone 16, it follows that if force is applied to any point of the edge 17, in a direction perpendicular to this edge, in order to tear the joint apart, such force is particularly liable to tear the material of the flap 15 in a direction along the grain.

To avoid such tearing, the present invention provides a tab on the flap 15 which may be conveniently grasped to exert the necessary force, and this tab is separated from the rest of the flap by a crease or score line which extends in a direction oblique to the edge 17 and adhesive zone 16, and oblique to the direction of the grain of the fibrous material. With such an arrangement, when the tab is grasped and pulled upwardly, the tab will initially bend along the score line relatively to the rest of the flap 15, and then the force exerted by a continued pull on the tab will be an oblique force, gradually lifting the flap 15 from the panel 11 and breaking the adhesive bond without causing tears to start from the edge 17 of the flap 15.

Preferably, but not necessarily, the pulling tab is placed at or near one end of the adhesive zone 16; that is, at one corner of the flap 15. Somewhat better results are obtained from this position of the tab. A tab in this preferred position is indicated at 20, and the oblique crease or score line is shown at 21. It is seen that when the tab 20 is pulled upwardly, it will tear the flap 15 away from the panel 11 in an oblique direction or along a somewhat oblique adhesive breaking line, gradually progressing from the tab 20 to the opposite end of the adhesive zone 16, and avoiding all accidental tearing of the material.

At times it may be desired to reduce the adhesive bond between the parts 11 and 15, to make the tearing open of the carton somewhat easier. For this purpose, a coating 22 of paraffine or other suitable material may be applied to the panel 11 through all or part of the zone to be occupied by the adhesive 16. This lessens the bond between the adhesive and the panel 11, not only making the carton easier to open, but also insuring that the adhesive will pull away from the panel 11 rather than from the flap 15, so that surface tearing of the fibers of the sheet material does not occur on the flap 15, but occurs only on the panel 11, where such surface tearing is of limited extent, being stopped after a short distance by the extreme edge of the panel 11.

Another feature of the invention relates to improvements in the closure flaps for closing the ends of the carton. When the carton has been completed in its knocked-down form shown in Fig. 2, opposite edges of the carton may be pressed to erect it from flat form into a rectangular cross-section. Then suitable flaps 31, 32, 33, and 34, attached respectively to the carton sides 11, 12, 13, and 14, may be closed, after placing the desired contents within the carton. The flaps at one end of the carton may be identical with those at the other end thereof, so that only one set of closure flaps need be described in detail.

The flap 32 may be a relatively large rectangular flap of a size to cover the full area of the end of the box, and may be folded down first, after which the narrow flap 34 may be folded down to cover the edge of the flap 32 which is opposite to the hinge connection of the flap 32 to the panel 12. Then the flaps 31 and 33 are folded down and interlocked with each other to hold the flaps in closed position.

The flap 31 is provided with a generally L-shaped slit including a long arm 36 preferably positioned approximately parallel to the hinge connection of the flap 31 to the panel 11, and further including a short arm 37 approximately at right-angles to the arm 36 of the slit, as plainly shown in the drawings. According to the present invention, a score line 38 is provided, extending from one end of the L-shaped slit to the adjacent side edge of the flap 31. Preferably this score line 38 extends from the end of the short arm 37 of the slit to the adjacent edge of the flap, and preferably also the direction of the score line 38 is approximately a continuation of a straight line drawn through the extreme ends of the slit 36, 37. The score line 38 may be described as offset from that end of the long arm 36 of the slit which is adjacent to the score line.

With this construction, the interlocking of the flaps 31 and 33 with each other is greatly facilitated, because the outer corner of the flap 31, beyond the score line 38, may readily be bent down relatively to the main body of the flap, the

material bending easily along this score line, with the result that the slit is opened up wide in the manner indicated in Fig. 3, so that the hooked end or tab on the flap 33 may be inserted through the opened-up slit with great ease. The downward pressure on the corner of the flap 31 also bends the flap material approximately along the dotted line 40, at the opposite end of the slit from the score line 38, and approximately in a continuation of the direction of the score line. It is preferable not to provide a score line at 40, however, because the provision of the score line 38 alone permits the flap to bend sufficiently, and yet leaves the flap stiff enough to maintain its normal shape properly after the flaps are closed and interlocked. If the flap were further weakened by a score line at the point 40, there is danger that it would be too weak and would accidentally open up enough to permit withdrawal of the flap 33 from the slit at a time when the closure flaps should remain closed. Hence the use of the score line 38 at only one end of the slit is preferred, and is found to work remarkably well in actual practice and to facilitate greatly the quick and easy insertion of the end of the flap 33 in the slit of the flap 31.

Although the location of the tab 20 and score line 21 as above described in connection with Figs. 1 and 2 is the preferred location, yet this tab and score line may be placed in other locations, if preferred. For example, they may be located as plainly shown in Figs. 4 and 5, in which the tab 20a is located approximately centrally of the edge 17 of the flap 15, and is separated therefrom by the score line 21a which is approximately in alinement with the extreme edge 17 of the flap 15, as shown. The tab 20a is materially shorter than the flap 15 and occupies materially less than the full length of the edge 17 of the flap, as shown. All of the other parts of the construction in this modified form of the invention may be the same as those previously described in connection with Figs. 1 to 3, inclusive, and they are indicated in Figs. 4 to 6 by the same reference numerals used for the corresponding parts in Figs. 1 to 3.

The score line 21a permits the tab 20a to be bent up easily so that it may be grasped readily in the position shown in Fig. 6. Furthermore, since the score line 21a permits the flap to bend with little resistance along this score line, the natural tendency of one grasping the tab 20a is to pull this tab upwardly until it is approximately perpendicular to the planes of the flap 15 and the panel 11. Then a continued pull on the tab in an upward direction pulls upwardly on the front edge of the flap 15 and pulls the adhesive 16 on this flap off from the panel 11, breaking the joint in an easy manner without surface tearing of the flap 15 and without tearing inwardly through the body of the flap 15, even when the grain of the board runs around the box or perpendicular to the edge 17. If this score line 21a were not provided, the natural tendency of a person opening the box would be not to lift the flap 20a so high up, and the pull would be more in a direction parallel to the planes of the flap 15 and panel 11, rather than in a direction approximately perpendicular thereto.

While two embodiments of the invention have been disclosed, it is to be understood that the inventive idea may be carried out in a number of ways. This application is, therefore, not to be limited to the precise details described, but

is intended to cover all variations and modifications thereof falling within the spirit of the invention or the scope of the appended claims.

I claim:

1. A carton comprising fibrous sheet material cut and folded to form a substantially rectangular body, said material including two layers forming an overlapping joint running along said rectangular body adjacent one edge thereof, adhesive connecting said overlapping layers to each other and having a main axis approximately parallel to the major portion of one free edge of the outer one of said two layers, and a projecting portion on the outer one of said two layers forming a tab located substantially at one end of said overlapping joint and projecting beyond said major portion of said free edge in a general direction transverse to said main axis of said adhesive and adapted to be grasped and pulled to separate said outer layer from the inner layer and break the adhesive connection between them.

2. A carton comprising two layers of fibrous sheet material having edges overlapped with and adhesively secured to each other, an accessible tab portion on one of said layers to be grasped and pulled for separating said two layers from each other, and a score line separating said tab portion from the remaining portion of said one of said layers, said score line being arranged obliquely to the direction of said overlapped edges of said layers.

3. A carton comprising an inner layer of fibrous sheet material, an outer layer of fibrous sheet material overlapped with said inner layer and terminating at an edge, adhesive connecting said two layers to each other along a zone close to and approximately parallel to said edge, said outer layer having at one point an extension forming a tab projecting substantially beyond said adhesive zone to a position in which it may be readily grasped and pulled to separate said two layers from each other, and a crease separating said tab from the remainder of said outer layer, said crease extending inwardly from said edge at an oblique angle thereto.

4. A carton comprising an inner layer of fibrous sheet material, an outer layer of fibrous sheet material overlapped with said inner layer and terminating at an edge, adhesive connecting said two layers to each other along a zone close to and approximately parallel to said edge, said outer layer having an extension projecting substantially beyond said adhesive zone approximately at one end thereof to form a tab which may be readily grasped and pulled to separate said two layers from each other, and a score line demarking said tab from the remainder of said outer layer.

5. A carton comprising an inner layer of fibrous sheet material, an outer layer of fibrous sheet material overlapped with said inner layer and terminating at an edge, adhesive connecting said two layers to each other along a zone close to and approximately parallel to said edge, said outer layer having an extension projecting beyond said adhesive zone approximately at one end thereof to form a tab which may be readily grasped and pulled to separate said two layers from each other, and a score line demarking said tab from the remainder of said outer layer, said score line extending obliquely relatively to said edge and said adhesive zone.

6. A carton comprising an inner layer of fibrous sheet material, an outer layer of fibrous sheet material having one end overlapped with said inner layer and adhesively connected thereto,

an extension on said outer layer forming a tab substantially at a corner of said outer layer adjacent said adhesive connection, and an oblique score line separating said tab from the remainder of said outer layer, so that force exerted on said tab to separate said two layers from each other will tend to be exerted somewhat along said end of said outer layer instead of wholly transverse to said end.

7. A carton comprising an inner layer of fibrous sheet material, an outer layer of fibrous sheet material overlapped with said inner layer and terminating at an edge, adhesive connecting said two layers to each other along a zone close to and approximately parallel to said edge, both of said layers having a grain running in a direction transverse to said adhesive zone, said outer layer having an extension projecting substantially beyond said adhesive zone to form a tab which may be readily grasped and pulled to separate said two layers from each other, and a score line extending obliquely to said grain and to said adhesive zone and demarking said tab at least partially from the remainder of said outer layer.

8. A carton comprising an inner layer of fibrous sheet material, an outer layer of fibrous sheet material overlapped with said inner layer and terminating at an edge, adhesive connecting said two layers to each other along a zone close to and approximately parallel to said edge, both of said layers having a grain running in a direction transverse to said adhesive zone, said outer layer having an extension projecting substantially beyond said adhesive zone substantially at a corner of said second layer and at one end of said adhesive zone, to form a tab which may be readily grasped and pulled to separate said two layers from each other, and a score line extending obliquely to said grain and to said adhesive zone and demarking said tab at least partially from the remainder of said outer layer.

9. A carton comprising fibrous sheet material cut and folded to form a substantially rectangular body, said material including two layers forming an overlapping joint running along said rectangular body adjacent one edge thereof, adhesive connecting said overlapping edges to each other, a projecting portion on the outer one of said two layers forming a tab adjacent said overlapping joint and adapted to be grasped and pulled to separate said outer layer from the inner layer to break the adhesive connection between them, said projecting portion extending along materially less than the full length of said one of said two layers, and a score line separating said projecting tab portion from the remaining portion of the outer one of said two layers.

10. A carton comprising an inner layer of fibrous sheet material, an outer layer of fibrous sheet material overlapped with said inner layer and terminating at an edge, adhesive connecting said two layers to each other along a zone close to and approximately parallel to said edge, both of said layers having a grain running in a direction transverse to said adhesive zone, said outer layer having an extension projecting substantially beyond said adhesive zone opposite a minor portion only of the length of said adhesive zone, to form a tab which may be readily grasped and pulled to separate said two layers from each other, and a score line extending transversely to said grain of said layers and demarking said tab at least partially from the remainder of said outer layer.

11. A carton comprising an inner layer of

fibrous sheet material, an outer layer of fibrous sheet material overlapped with said inner layer and terminating at an edge, adhesive connecting said two layers to each other along a zone close to and approximately parallel to said edge, said outer layer having an extension projecting substantially beyond said adhesive zone approximately centrally of the length of said edge to form a tab

which may be readily grasped and pulled to separate said two layers from each other, said tab having a length along said edge materially less than the length of said edge, and a score line demarking said tab from the remainder of said outer layer, said score line being located approximately in alinement with said edge. 5

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