Aug. 27, 1957 W. H. INMAN 2,804,256

COLLAPSIBLE CARTON

Filed June 13, 1955 2 Sheets-Sheet 1

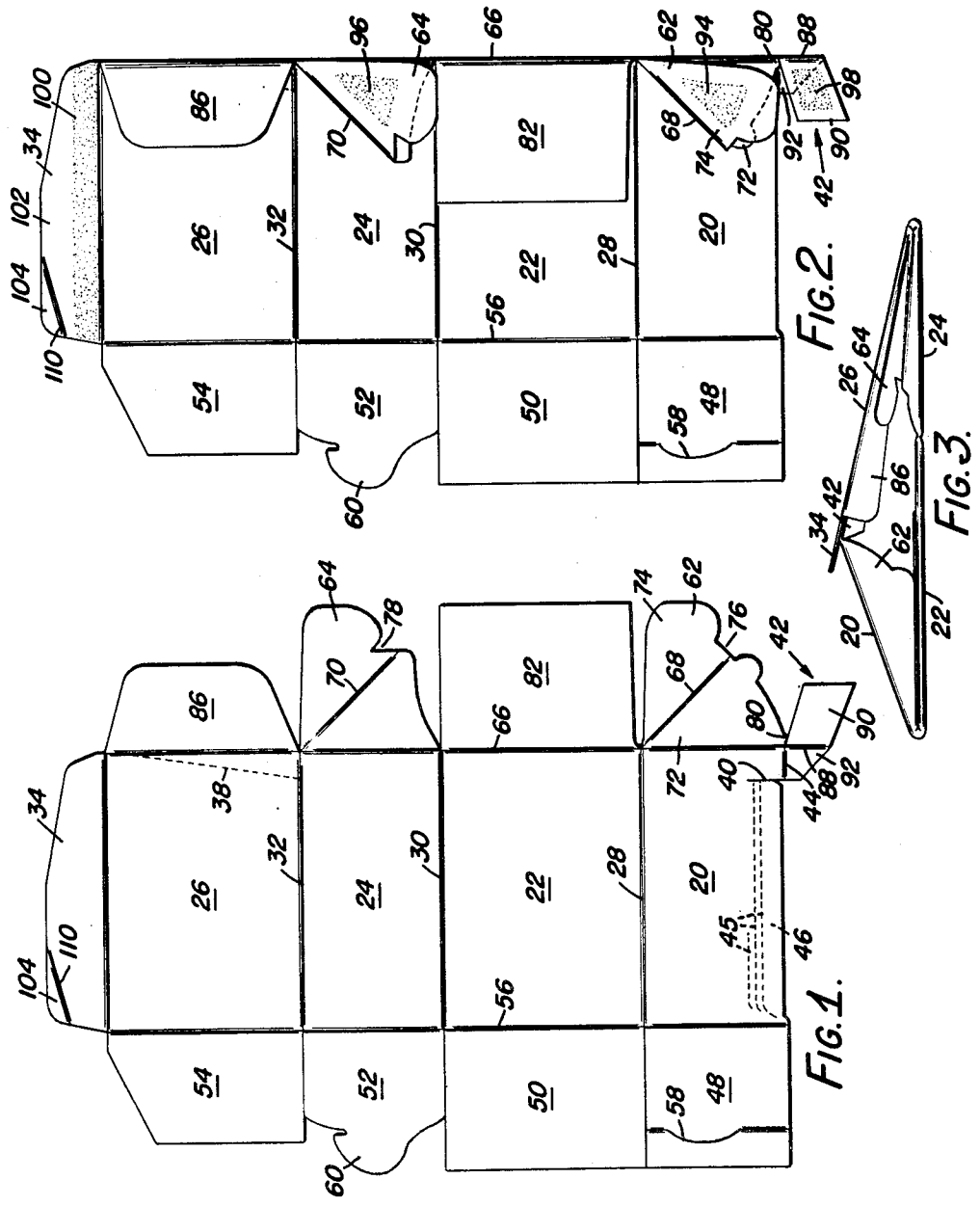


FIG. 2.

FIG. 3.

FIG. 1.

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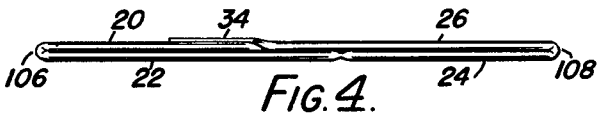


FIG. 4.

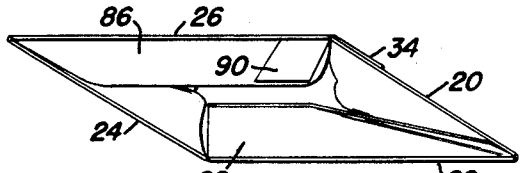


FIG. 5.

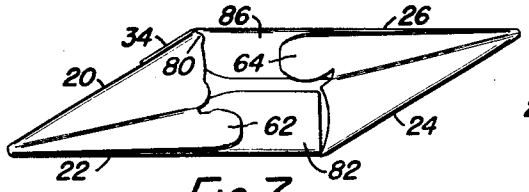


FIG. 7.

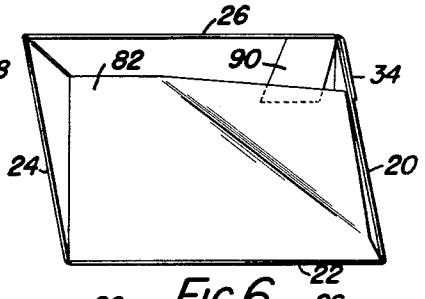


FIG. 6.

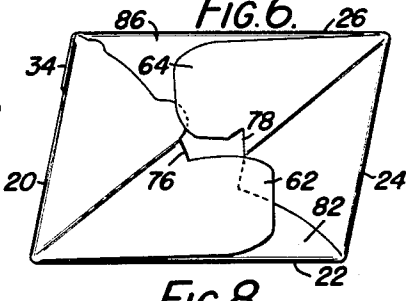


FIG. 8.

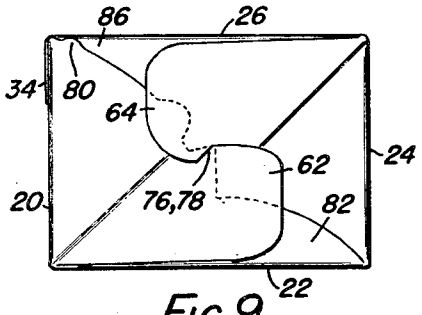


FIG. 9.

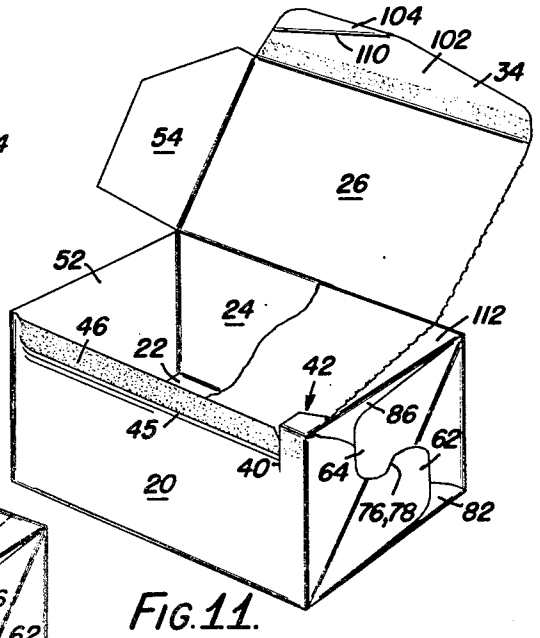


FIG. 11.

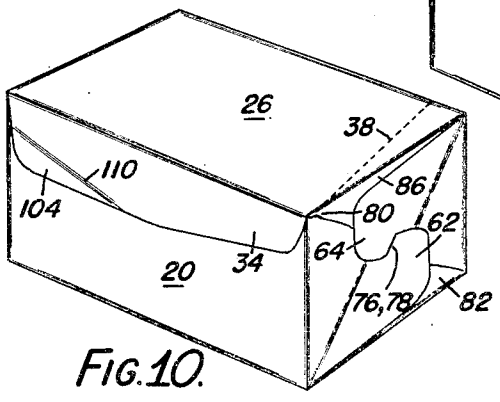


FIG. 10.

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2,804,256

COLLAPSIBLE CARTON

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Application June 13, 1955, Serial No. 514,957

8 Claims. (Cl. 229—51)

This invention relates to collapsible cartons made of fibrous material, such as cardboard, for packaging ice cream and other frozen comestibles, and the like. As the result of a recent invention, such cartons have been provided with bottom flaps so constructed as to be automatically unfolded and extended by manipulation of the side walls. This automatic bottom construction has been combined with a side opening pull flap and has resulted in a practical and useful carton, which has been widely used in this field. However, these cartons were so constructed that when the side opening flap was pulled and the closure wall opened, the bottom flaps were moved out of engagement and the carton became partially unfolded and unfit for further use.

One object of the present invention is to provide an improved carton of the general character described, but so constructed as to be kept substantially intact when opened for partial removal of the contents, and thus, kept in condition for being reclosed for further preservation of the remaining contents.

Another object is to provide a carton having the above advantages, which is so constructed as to be readily manufactured, conveniently erected for filling and conveniently opened by the consumer, as described above.

Another object is to supply a carton of the above nature which requires less material per carton than cartons heretofore constructed.

A further object is to afford a carton having the above advantages in a form capable of being readily manufactured in quantity lots, by known machines and at relatively low cost.

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 plan view of the cardboard blank forming the carton;

Fig. 2 is a similar view with bottom flap portions folded over and glue applied;

Fig. 3 is an edge view of the blank as seen from the right in Fig. 2, but with the outer wall portions partly folded over toward glued position.

Fig. 4 is a view similar to Fig. 3, but with the parts glued together and the carton in collapsed condition.

Figs. 5 and 6 are top plan views of the inside of the carton in progressive positions of erection for filling;

Figs. 7 and 8 are bottom plan views of the outside of the carton in progressive positions of erection for filling substantially corresponding to Figs. 5 and 6, respectively;

Fig. 9 is a bottom plan view of the carton in fully erected position;

Fig. 10 is a perspective view of the carton showing the same erected, filled and closed, and

Fig. 11 is a perspective view of the carton similar to Fig. 10, but showing the carton after being opened for removal of a portion of the contents.

The preferred embodiment of the present invention, herein disclosed by way of illustration, is preferably made of a one-piece cardboard blank such as shown in Fig. 1 of the drawings, cut and scored to form front, side, rear and closure walls **20**, **22**, **24** and **26**, respectively, separated by parallel scored fold lines **28**, **30** and **32**, as shown. Closure wall **26** carries a securing strip **34** adapted to be detachably glued to the free edge portion of the opposite or front wall **20** when the walls are folded over, as hereafter described. A line of weakening, such as perforations **38** extends from the lower front corner of closure wall **26** upwardly toward fold line **32** which separates closure wall **26** from rear wall **24**, for a purpose hereafter described.

Front wall **20** has a slit **40** extending inwardly from its free edge as shown in Fig. 1. A member or finger shown generally at **42** is foldably connected by fold line **44** to the upper or free edge of front wall **20** adjacent slit **40** for a purpose hereafter described. Front wall **20** has its outer surface cut or otherwise scored along a series of parallel lines of weakness **45** to produce a weakened surface area **46** for preventing peeling of front wall **20** when the carton is open as hereafter described.

Walls **20**, **22**, **24** and **26** are provided with top closure flaps **48**, **50**, **52** and **54**, respectively, which are foldably connected therewith along a score line **56**. Flap **48** is formed with a slit **58** to receive a tongue or hook **60** on flap **52** for securing these top flaps in position for closing the top of the carton. The carton is filled through the top after which the top flaps are folded over closing the carton.

Front and rear walls **20** and **24** carry bottom closure flaps **62** and **64** foldably connected therewith along a score line **66**. These flaps are provided with score lines **68** and **70**, respectively, extending diagonally across and separating each of them into two portions as at **72** and **74**, so that each may be folded on itself and folded over the side wall to which it is connected, as further described hereafter.

The outer free edges of flaps **62** and **64** have the irregular shape shown in the drawings, including notches **76** and **78**, respectively, for engagement with each other in the erected position of the carton. Bottom flap **62** has a small outwardly projecting part or portion **80**, having a purpose to be hereafter more fully described. Side wall **22** has a substantially rectangular inner bottom flap **82** foldably connected therewith along line **66**, between flaps **62** and **64**. Closure wall **26** has an inner bottom flap **86** foldably connected therewith along line **66**.

In the folding and gluing of the blank as shown in Fig. 2, bottom flap **62** is folded on itself and folded inwardly over the front wall **20** as shown. Flap **82** is folded over side wall **22**. Flap **64** is folded on itself and folded inwardly over rear wall **22** and flap **86** is folded over closure wall **26**, as shown. Finger **42** is folded on itself about a fold line **88** which is essentially parallel with fold line **66** and at substantially right angles to fold line **44**, and which divides finger **42** into an outer portion **90** and an inner portion **92**, as shown in Fig. 1. In this position of the parts, glue is applied to a restricted area **94** of flap **62**, to a similar restricted area **96** of flap **64** and to a restricted area **98** on outer portion **90** of finger **42**. Glue is likewise applied in a narrow band **100** on securing strip **34** adjacent its line of fold leaving an unglued outer portion **102** to provide a free pull tab which is preferably extended as at **104**, Fig. 2.

In the further folding and gluing of the blank, the closure wall **26** with its inwardly folded flap **86** is folded over rear wall **24** and its inwardly folded bottom flap **64**, as shown in Fig. 3. At the same time front wall **20** and its inwardly folded flap **62** is folded down over side wall **22** and its inwardly folded flap **82**. During this lat-

ter operation finger **42** which is folded upon itself as shown in Fig. 2, is directed and guided to enter between closure wall **26** and its bottom flap **86**, with the result that the outer portion **90** of finger **42** is glued to the inside of bottom flap **86**, as can be best seen in Fig. 5. Securing strip **34** is simultaneously pressed down over and glued to the weakened area **46** of front wall **20** thus completing the folding and gluing of the carton, in the compact, collapsed condition shown in Fig. 4, ready for storage and shipment to the ice cream dispensers.

When it is desired to erect the carton for filling, this is quickly accomplished by inward pressure against the opposite edges, which serves to separate and distend the side walls in the progressive manner shown in Figs. 5 and 6 as viewed through the open top of the container, and in views 7 and 8 as viewed from the bottom of the container. The separation of front wall **20** from side wall **22** tends to pull the inwardly folded flap **62** and the inner bottom flap **82** to erected position, while the separation of closure wall **26** and rear wall **24** pulls inwardly folded flap **64** and inner bottom flap **86** to erected position. Projection **80** on the inner portion of flap **62** guides flap **62** over the outer surface of flap **86**, as best shown in Fig. 7, thereby initiating the proper movement of the flaps towards erected position. As the carton continues towards erected position, the inner portion of flap **62** rides along the outer surface of flap **86** and passes beneath the outer portion of opposite flap **64**, as can be seen in Fig. 8. Similarly the inner portion of flap **64** passes beneath the outer portion of flap **62**, and along the outer surface of flap **82**, also as shown in Fig. 8. As a result, the opposing edges of flaps **62** and **64** slide along the outer surfaces of the opposite inner bottom flaps until flaps **62** and **64** come into interengagement as shown in Fig. 9, with notches **76** and **78** interengaging, as shown in Figs. 9 and 10. Such engagement of the notches tends to limit the erecting movement of flaps **62** and **64** with these flaps in a position normal to the walls of the carton. The erecting movement of the flaps is further limited by the engagement of inner bottom flap **82** with the inside of flaps **62** and **64** along the bottom corners of the carton.

Flaps **62** and **82**, and flaps **64** and **86**, when secured together as above, form two interengaging bottom closure sections, each comprising an inner and outer bottom flap. The bottom closure sections are quickly snapped to their erected positions by merely pressing on the opposite corners of the carton **106** and **108** (Fig. 4), leaving the top closure flaps in open position to receive the contents. The carton, resting on its bottom, is then filled and the top closed by folding flaps **50** and **54** down across the filling opening, after which flap **48** is folded down followed by flap **52**, the tongue **60** of which is engaged in slit **58** of flap **48** to secure the closure of the top or filling opening. It will be noted that tongue **60** is on the flap of the rear wall to which the closure wall is attached, and is pointed in the direction of the closure wall so that an opening pull of the latter serves to keep the tongues engaged in slit **58** and to maintain that end of the carton closed. The carton is now in the condition shown in Fig. 10 and is ready for delivery to the consumer.

To open the carton, it is only necessary to grasp and pull the unglued free edge **102** or extension **104** of securing strip **34**. For this purpose, tab or extension **104** may be readily bent relative to securing strip **34** along a diagonal fold line **110**. The opening of closure wall **26** is made easier by the provision of weakened area **46** on the upper free edge of front wall **20**. This weakened area which is defined by slits **45** and cut **40**, not only makes it easier to break the detachable connection between securing flap **34** and front wall **20**, but it also prevents undesired surface peeling of either the front wall or securing strip. After closure wall **26** is open, it is torn along the line of perforations **38** to its position shown

in Fig. 11. This tearing action leaves a flange **112**, Fig. 11, extending from the rear wall of the carton across the closure wall toward the lower front corner thereof. The line of perforations **38** preferably extends diagonally across the closure wall starting at the lower front corners of the closure wall and extending upwardly towards the rear edge of the closure wall. When the carton is in its open position as shown in Fig. 11, finger **42** which is connected to the front wall and glued to the bottom flap **86**, connected to the closure wall, maintains a connection between the front and rear walls **20** and **26**, respectively, and holds them in erected position, as shown in Fig. 11, and at the same time holds the bottom flaps in engagement, thereby preventing the bottom closure from separating as the carton is opened.

At the top end of the carton, top flap **54**, which does not come into contact with the contents of the carton, is readily raised along with the opening movement of closure wall **26**. When closure wall **26** is opened, tongue **60** on flap **52** is drawn more tightly into engagement with slot **58** on the opposite top flap **48** so that the remaining top closure flaps are maintained in closed position and the carton is maintained in shape while as much of the contents as desired is dipped out.

The carton may be readily reclosed for replacing under refrigeration to preserve the residue of the contents for further consumption. This is done by merely guiding flap **54** into position outside of top flap **50** and swinging closure wall **26** downwardly while guiding its securing strip **34** inside the top edge of front wall **20**. One end of the securing strip is inserted through slit **40** in the front wall so as to extend on the outside of the front wall and thus out of contact with the carton contents. This effectively closes the carton while preserving a clean portion of the cover which may be grasped to reopen the carton without soiling the fingers.

Thus it will be seen from the above description that my invention provides a carton which may be readily and economically manufactured with the usual materials and by known methods and standard machines, in compact collapsed condition for storage or shipment to food dispensers. The latter may erect the carton by merely pressing on its opposite corners to erect its automatic bottom. Thereafter, the carton may be easily filled at the top and closed in the usual manner until ready for delivery to the consumer. The consumer can easily open the carton to remove a portion of its contents by pulling on pull tab **34** so as to raise the closure wall to open position in which the contents are exposed for dipping out to the extent desired. Thereafter, the carton may be readily closed to preserve the remaining contents by closing and securing the closure wall, as described, a portion of the pull tab being conveniently disposed on the outside of the front wall to provide means for further opening the cover without soiling the fingers.

In addition, it will be seen that the invention combines a carton having the above advantages which may be readily and economically manufactured with a minimum of loss. That is, the blanks, as shown in Fig. 1, are so designed that there is a minimum of wastage of cardboard stock material and the blanks may be laid out end to end with the securing strip **34** of one blank in close proximity to the finger **42** of the adjacent blank, thereby minimizing the wastage of stock material.

It will thus be seen that the invention accomplishes its objects and while it has been herein disclosed by reference to the details of a preferred embodiment, it is to be understood that such disclosure is intended in an illustrative, rather than a limiting sense, as it is contemplated that various modifications in the construction and arrangement of the parts will readily occur to those skilled in the art, within the spirit of the invention and the scope of the appended claims.

I claim:

1. A collapsible carton having a self erecting bottom

comprising a one-piece blank cut, scored and folded to form foldably connected front, rear, side and closure walls, a detachable connection between said closure wall and free edge of said front wall, top and bottom closure flaps foldably connected to said walls at the opposite ends thereof, said bottom flaps being arranged in pairs of opposed inner and outer flaps, each of said outer flaps being secured to the adjacent inner flap and forming the bottom of the carton in sections, said sections being located on opposite sides of a hinge connection between adjacent side walls and on opposite sides of said detachable connection, each of said outer flaps being formed with a fold line and being foldable inwardly about said fold line together with the respective one of said inner flaps upon relative lateral shifting of said side walls to collapsed position, said bottom closure flaps being moved to erected closed position normal to said walls by erecting movement of said walls, and a finger foldably connected with said front wall, said finger having a fold line extending thereacross at substantially right angles to the line of connection of said finger with said front wall for dividing said finger into inner and outer portions, said outer portion being secured to the inner surface of the bottom flap connected to said closure wall, said closure wall having a line of perforations extending thereacross adjacent the bottom of the carton, said closure wall being detachable from said front wall and separable along said line of perforations for movement to open position with said finger connecting said front and rear walls for maintaining the same in erected position.

2. A carton as specified in claim 1 in which said line of perforations extend from the bottom of said closure wall adjacent the front edge thereof upwardly across said closure wall to the line of connection between said closure wall and said rear wall.

3. A collapsible carton having a self-erecting bottom comprising a blank cut, scored and folded to form foldably connected side walls and a closure wall, a detachable connection between said closure wall and the opposite side wall for securing said closure wall in closed position, said walls having top and bottom closure flaps foldably connected thereto at the opposite ends thereof, said bottom flaps being arranged in pairs of opposed inner and outer flaps, each of said outer flaps being secured to the adjacent inner flap for forming the bottom of the carton in sections, each of said outer flaps being formed with a fold line and adapted to fold inwardly at said fold line between said walls together with the respective inner flap when said walls are collapsed, said bottom closure flaps being moved to erected closed position normal to said walls by erecting movement of said walls, and a member connected at one end to said opposite side wall and at the other end to the inner surface of the bottom flap connected to said closure wall for holding said side walls erect when said carton is opened, said closure wall being detachable from said opposite side wall and separable from the bottom flap connected with said closure wall for movement to open position to expose the carton contents with the carton in erected position.

4. A collapsible carton having a self-erecting bottom comprising a blank cut, scored and folded to form foldably connected side walls and a closure wall, a detachable connection between said closure wall and the opposite side wall for securing said closure wall in closed position, said walls having top and bottom closure flaps foldably connected thereto at the opposite ends thereof, said bottom flaps being arranged in pairs of opposed inner and outer flaps, each of said outer flaps being secured to the adjacent inner flap for forming the bottom of the carton in sections, each of said outer flaps being formed with a fold line and adapted to fold inwardly at said fold line between said walls together with the respective inner flap when said walls are collapsed, said bottom closure flaps being moved to erected closed position normal to said

walls and into frictional interengagement by the erecting movement of said walls for holding the bottom of said carton in erected position, locking means on two of said top closure flaps for releasably locking said top closure flaps in closed position in the erected position of the carton, and a member connected at one end to said opposite side wall and at the other end to the inner surface of the bottom flap connected to said closure wall for holding said side walls erect when said carton is opened, said closure wall being detachable from said opposite side wall and separable from the bottom flap connected with said closure wall for movement to open position to expose the carton contents with the carton in erected position.

5. A collapsible carton having a self-erecting bottom comprising a blank cut, scored and folded to form foldably connected side walls and a closure wall, a detachable connection between said closure wall and the opposite side wall for securing said closure wall in closed position, said walls having top and bottom closure flaps foldably connected thereto at the opposite ends thereof, said bottom flaps being arranged in pairs of opposed inner and outer flaps, each of said outer flaps being secured to the adjacent inner flap for forming the bottom of the carton in seetions, each of said outer flaps being formed with a fold line and adapted to fold inwardly at said fold line between said walls together with the respective inner flap when said walls are collapsed, said bottom closure flaps being moved to erected closed position normal to said walls and into frictional interengagement by the erecting movement of said walls for holding the bottom of said carton in erected position, locking means on two of said top closure flaps for releasably locking said top closure flaps in closed position in the erected position of the carton, and a member connected at one end to said opposite side wall and at the other end to the inner surface of the bottom flap connected to said closure wall for holding said side walls erect when said carton is opened, said closure wall having a line of weakening extending thereacross adjacent the bottom of the carton, said closure wall being detachable from said opposite side wall and separable along said line of weakening from the bottom flap connected to said closure wall for movement to open position to expose the carton contents with the carton in erected position.

6. A collapsible carton having a self-erecting bottom comprising a blank cut, scored and folded to form foldably connected side walls and a closure wall, a detachable connection between said closure wall and the opposite side wall for securing said closure wall in closed position, said walls having top and bottom closure flaps foldably connected thereto at the opposite ends thereof, said bottom flaps being arranged in pairs of opposed inner and outer flaps, each of said outer flaps being secured to the adjacent inner flap for forming the bottom of the carton in sections, each of said outer flaps being formed with a fold line and adapted to fold inwardly at said fold line between said walls together with the respective inner flap when said walls are collapsed, said bottom closure flaps being moved to erected closed position normal to said walls by erecting movement of said walls, and a member connected at one end to said opposite side wall and the other end to the inner surface of the bottom flap connected to said closure wall for holding said side walls erect when said carton is opened, said closure wall having a line of weakening extending thereacross adjacent the bottom of the carton, said closure wall being detachable from said opposite side wall and separable along said line of weakening from the bottom flap connected with said closure wall for movement to open position to expose the carton contents with the carton in erected position.

7. A collapsible carton having a self-erecting bottom construction as specified in claim 6 in which said line of weakening comprises a line of perforations.

8. A collapsible carton having a self-erecting bottom construction as specified in claim 6 in which said line of weakening comprises a line of perforations extending from the bottom front corner of the closure wall along the line of connection between said closure wall and the bottom flap connected therewith and thence upwardly across said closure wall to the rear edge thereof.

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