FIG. 1

FIG. 2
SHIPPING AND DISPENSING CARTONS

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This invention relates to cartons and resides more particularly in a novel carton, which is suitable for shipping friable or granular material, small article, etc., and may be quickly converted at the point of use, so that its contents may be freely dispensed. While cartons for shipping and dispensing purposes have been produced heretofore, the prior cartons are subject to a number of objections, in that they are frequently made of two separate blanks and are costly to produce because of the manual labor involved, they do not form a tight shipping package, unless auxiliary sealing means are used, and, when once opened for dispensing their contents, they cannot again be tightly closed. The carton of the invention is not subject to the disadvantages of the prior cartons and it is made from a single blank by folding and gluing operations, which can be performed by machine. The carton provides a tight leak-proof shipping package without extra sealing strips or like expedients and the carton can be closed whenever dispensing is to be discontinued.

For a better understanding of the invention, reference may be made to the accompanying drawings, in which Fig. 1 is a plan view of a blank for one form of the new carton:

Fig. 2 is a view of the blank of the Fig. 1 after the initial stage of conversion of the blank into a carton:

Fig. 3 is a horizontal sectional view through the erected carton:

Fig. 4 is a fragmentary sectional view on the line 4—4 of Fig. 3 before the carton has been opened:

Fig. 5 is a view similar to Fig. 4 but showing the carton opened and in condition for dispensing:

Fig. 6 is a fragmentary perspective view showing the carton in condition for dispensing:

Fig. 7 is a fragmentary sectional view on the line 7—7 of Fig. 3:

The blank 10 shown in Fig. 1 is for the formation of a carton having a wide front wall 11 connected to narrow side walls 12, 13 lying on either side thereof along respective hinge lines 14, 15. A rear wall 16 of the same width as the front wall is connected to one of the side walls, such as the wall 13, along a hinge line 17 and, at one end, the blank is provided with a glue flap 18 which, in the blank shown, is connected to the side wall 12 along a hinge line 19. At the upper end, the blank is provided with wide flaps 20, 21 hinged to the upper ends of the front wall 11 and the rear wall 16, respectively, and with narrow flaps 22, 23 hinged to the upper ends of the side walls 12, 13, respectively.

At the lower end of the front wall, a trough panel 24 is defined by a scored line 25, which is generally of U-shape and extends inward into the wall and runs from one end to the other of a hinge line 26 defining the lower end of the wall. The panel 24 is thus hinged to the wall and, upon breaking the scored line 25, the panel can be swung out of the plane of the wall on the hinge line 26. A wide closure flap 27 is connected to the lower end of the front wall 11 along the line 26 and a hinge flap 28 is connected to the closure flap 27 along a hinge line 29, which is narrower than the flap 27 and lies parallel to the line 26 and approximately half-way across the flap 27, so that portions of the flap 27 project beyond the hinge line. The hinge flap 28 is provided with a slot 30 in line with the ends of the closure flap and is traversed by hinge lines 31, 32, which are in alignment with each other and with the ends of the closure flap. A pair of wings 33, 34 are connected to the side edges of the hinge flap 28 along respective hinge lines 35, 36 and the wings have curved edges 33a, 34a, and projections 33b, 34b at the outside of the curved edges. A retarding panel 37 is connected to the hinge flap 28 along a hinge line 38 lying parallel to the hinge lines 31, 32 and inward from the outer edges of the hinge flap, so that a portion of the panel lies in a recess extending inward from the outer edge of the hinge flap.

The rear wall 16 has a wide closure flap 39 hinged to its lower edge and narrow closure flaps 40, 41 are hinged to the lower edges of the side walls 12, 13.

In converting the blank 19 into a carton, the blank is laid flat and glue is applied to the surface of the hinge flap 38 and to that part of the surface of the retarding panel 37, which lies outward from the ends of the hinge flap on opposite sides of the recess in the flap, in which the end of the panel is received. After the application of glue, the hinge flap 28 and the retarding panel 37 are folded upwardly on the hinge line 29, until that part of the flap lying between the line 29 and the lines 31, 32 lies in contact with and is secured to the surface of the closure flap 27 and the remainder of the hinge flap 28 and the retarding panel 37 lies in contact with and are secured to the trough panel 24 and the inner surface of the front wall 11 adjacent to and above the line 25, respectively. Glue is next applied to one surface of the glue flap 18 and the blank is then folded in the usual way on the lines 14 and 17, so that the front wall 11 and the side wall 13 lie in a plane and are overlain by the side wall 12 and the rear wall 16 with the glue flap lying beneath the rear wall 16 with its glued surface adhering thereto. The blank has thus been converted into a collapsed tube and, to convert the tube into a carton, it is first squared and, in this operation, the wings 33, 34 are folded on their hinge lines 35, 36 to extend along the side walls 12, 13. Glue is then applied to the appropriate surfaces of the bottom flaps and the narrow closure flaps 40, 41 attached to the side walls are first turned in, after which the flaps 27, 28 are turned in in that order. At the conclusion of these operations, the bottom of the carton is closed and, after the carton is filled, the top is closed by turning in and gluing together the top closure flaps 20, 21, 22 and 23 in the usual way.

During shipment, the filled carton provides a tight package for the contents, since the trough panel 24 lies in the plane of the front wall 11 and is held in position by its scored connection 25 to the wall. The trough panel overlies the unglued portion of the retarding panel 37, which projects below the top of the trough panel, and, at the middle of its upper edge, the trough panel is provided with a tab 24c lying in front of a tab 37a partially severed from the retarding panel 37 and carrying no glue. When the carton is to be used for dispensing purposes, the tab 24c is pushed inward out of the plane of the trough panel and such movement is facilitated by the swinging of the flap 37a out of the plane of panel 37. With the tab 24c pushed inwardly, the finger is placed behind the upper edge of the panel 24 and the panel is swung forwardly on hinge line 26, the connection of the panel to the front wall along line 25 being broken in this operation. As the trough panel is thus swung, the wings 33, 34 move out through the discharge opening left by displacement
of the trough panel. That part of the line 25 defining the upper edge of the trough panel is formed with small curved portions 25a which, upon displacement of the panel, leave notches receiving the curved edges 33a, 34a of the wings and guiding the wings in their movement. The outward swinging of the trough panel 24 is arrested by engagement of the projections 33b, 34b with the inner surface of the front wall at the notches and, when the trough panel is in its outward position, the panel and wings form a trough, which is kept filled by the movement of the contents of the carton through the discharge opening into the trough. The retarding panel 37 projects down below the upper edge of the discharge opening and thus reduces the effective size of the opening to prevent flooding of the material.

Whenever dispensing is to be discontinued, the discharge opening can be closed by swinging the trough panel back into the plane of the front wall 11. The width of the hinge flap 28 between the hinge lines 31, 32 and the free end of the flap is slightly greater than the width of the trough panel 24, so that the ends of the flap on opposite sides of the recess receiving the end of the retarding panel 37 project upwardly above the top of the trough panel 24. Accordingly, when the panel 24 is swung back toward the plane of the front wall 11, the projecting ends of the hinge flap 28 snap past the lower edge of the discharge opening as indicated at 11a (Fig. 7) and, when the trough panel 24 lies in the plane of the front wall, the ends of the hinge flap lie against the rear surface of the wall and thus prevent accidental outward swinging of the trough panel.

I claim:
1. A carton for shipping and dispensing purposes, which comprises a rear wall, side walls having their rear edges connected to respective side edges of the rear wall, a front wall connecting the front edges of the side walls, a trough panel partially severed from the front wall and connected to the lower edge of the wall along a hinge line, the panel being adapted to be swung forwardly out of the plane of the front wall to leave a discharge opening and form part of a trough, flaps secured to the upper and lower ends of the walls and co-operating to form end closures for the carton, the flaps including a bottom flap secured to the lower end of the front wall, a hinge flap connected to said bottom flap and having a section narrower than the flap secured to the upper face of the flap, a second section secured to the inner face of the trough panel, and a third section secured to the inner face of the front wall above the trough panel, and a pair of wings connected to the side edges of the second section of the hinge flap and extending rearward therefrom.

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