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COLLAPSIBLE SETUP CARTON

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ABSTRACT OF THE DISCLOSURE

This invention relates to improvements in collapsible setup cartons and more particularly to cartons which may be set up and then filled with stationery such as envelopes by means of automatic machinery; preferably the subject carton is made from sturdy paper board commonly employed for cartons of this nature.

It is customary for monetary contributions payable at stipulated intervals to be made in envelopes on which is imprinted the date relating to the period to which the contribution refers. Accordingly, it has become the practice to store a supply of dated envelopes in cartons from which they may be extracted consecutively at the requisite intervals. The packaging of such envelopes lends itself to the use of collapsible setup cartons constructed for erecting, filling and closing on high speed automatic machinery so that large numbers of cartons may be filled and closed in short periods of time. However, when articles such as envelopes are being fed into the open end of the erected carton difficulty has been experienced in that the open end of the collapsible carton on being set up does not adopt a rectangular configuration with the result that the envelopes, which are commonly made of thin paper, thus lacking stiffness, bend and jam in the carton.

It is, therefore, an object of the invention that a succession of collapsible cartons may be set up, closed at the bottom end, filled at the top end in continuous manner, with a pack of envelopes and closed on high speed automatic machinery.

The collapsible setup carton according to the invention is characterised by having opposed closure flaps at one end which interengage in the set up position whereby the carton at that end adopts a parallelogram configuration, with one pair of opposed end walls of the parallelogram being tilted in a direction reverse to the direction in which the carton moves to the collapsed condition.

Referring now to the drawings, in which:

FIGURE 1 is a plan view on reduced scale of a preferred embodiment of a blank from which the subject carton is constructed;

FIGURE 2 is a view of a carton in the collapsed condition assembled from the blank shown in FIGURE 1;

FIGURE 3 is an isometric view of the set up carton with the bottom end closed and showing the parallelogram configuration;

FIGURES 4A, 4B and 4C are isometric views of the carton looking particularly at the bottom thereof, and showing the bottom of the carton at three different stages during the closing operation thereof.

While the carton of the invention can be embodied in various proportions and sizes and of various materials it is commonly utilised as illustrated herein and is preferably constructed of a sheet of standard planar fiberboard of medim thickness. The blanks of material is divided by score lines into different sections and referring first to FIGURE 1 the subject carton 10 in a blank form comprises a first base panel 12 of general rectangular contour partially defined by a pair of longitudinal score lines 14 and 16 and a pair of transverse score lines 18 and 20 conveniently disposed perpendicular to the lines 14 and 16 so that the base panel 12 is truly rectangular. Adjacent the transverse score line 20 there is provided a first side panel 22 which is also defined by end score lines 24 and 26 which are substantial continuations of the longitudinal scores lines 14 and 16. The side panel 22 is also defined by a transverse score line 28 opposed to the score line 20. Adjacent the score line 28 there is provided a second base panel 30 partially defined by an outer edge 32 which is a substantial continuation of the longitudinal score lines 14 and 24 and an opposed longitudinal score line 34 which is a substantial continuation of the longitudinal score lines 16 and 26. Opposed to the transverse score line 28 and completely defining the panel 30 is another transverse score line 36.

Adjacent the panel 30 is another side panel 38 which is partially defined by an outer edge 40 which is a substantial continuation of the outer edge 32 and an opposed score line 42 which is a substantial continuation of the horizontal score line 34. The side panel 38 is completed by an outer edge 44 which is parallel to the transverse score line 36; the flap 38 has the same dimension as the first side panel 22.

For a well known purpose, adjacent the transverse score line 18 is a securing flap 46 which is defined by an outer edge 48 which is a substantial continuation of the longitudinal score line 14 and another outer edge 50 which is opposed to the transverse score line 18. The securing flap 46 is completed by an outer edge 52, one end of which terminates with the junction of the score lines 16 and 18 and is inclined upwards with respect to the score line 16. With the parts already described it will be appreciated that folding in the same direction along the transverse lines 18, 20, 28 and 36 and adhesively securing the flap 38 over the flap 46 will provide a conventional box structure.

To provide additional support to the side panel 22 a reinforcing flap 54 of substantially the same dimension extends outward from the score line 24; the reinforcing flap 54 is bent over and glued to the inner face of the side wall 22. The box structure so far described is collapsed in the conventional way by further bending at a fold line connecting one of the body panels to an adjacent side panel with corresponding further bending at the diametrically opposed fold line connecting the other body panel to the other side panel. This further bending in the subject carton takes place along the transverse score lines 20 and 36 in the direction of the arrow in FIGURE 2 with the result that the second base panel 30 and the side panel 22 meet the first base panel 12 and side panel 38. The carton 10 may be set up by applying pressure along either of the same score lines 20 and 36.

Means are provided for closing one end of the collapsible carton after it is set up, the other end remaining open to permit entrance of the envelopes. The closure means comprises co-operating flaps which snap together on pressure, each flap being hingedly connected to a given carton body panel along a respective horizontal fold line. The flaps interengage in the set up position whereby the carton at that end adopts a parallelogram configuration with the side panels being tilted in a direction reverse to that in which the carton moves to the collapsed condition; as a result the open end of the carton will move to adopt a more rectangular configuration due to the inherent twisting consequent on previous folding to the collapsed position.

In the preferred arrangement shown in FIGURE 1 the parallelogram configuration at the base is adopted by means of a pair of major closure flaps 56 and 58 connected to the respective base panels 12 and 30; preferably each of the closure flaps is substantially co-extensive at its base with its associated body panel. The major closure flap 56 has slightly inclined edges 60 and 62 to facilitate closing since it is the first to be folded inwardly.
to form the end closure as shown in FIGURE 4A. The outer edge of the major flap 56 is substantially parallel to the horizontal fold line 16 and projecting therefrom is a tab 66 which is arranged to the slightly offset with respect to the inclined edges 60 and 62. This can be expressed by reference to the distances denoted X and Y on FIGURE 4A in that the former is arranged to be slightly less than the latter. The precise relationship will depend on the resiliency of the material from which the box is comprised but it is found in practice that the best results are obtained when the distance X is about 92% of the distance Y. The major flap 56 is provided also with end tabs 68 and 70; it is to be noted that the spaces 72 and 74 between the centre tab 66 and the end tabs 68 and 70 respectively are the same length with the result that the end tab 68 is narrower than the end tab 70.

The other major closure flap 58 is provided with two tabs 76 and 78 which are dimensioned to be no larger than the spaces 72 and 74 in the other major closure flap 56. The two tabs 76 and 78 are separated by a notch 80 which is centrally disposed on the major flap 58. The edges 82 and 84 of the notch 80 are inclined from the base of the latter to join the tabs 76 and 78. It will be clear that after the major flap 56 has been pressed inwards when the carton is set up that similar pressure on the major flap 58 will cause the tabs 76 and 78 to snap into the spaces 72 and 74 respectively of the major flap 56. At the same time the centre tab 66 being offset will catch against the centrally placed notch 80 on the major flap 58 thus causing the end of the box to adopt the requisite parallelogram configuration (FIGURE 4C).

It is obvious that minor closure flaps generally denoted by numerals 86 will be necessary to close the end due to openings left through the slight tapering at the end of the major flap 56 and the marked truncation at the end of the major flap 58. The minor closure flaps 86 are essentially the same except for symmetry and preferably are substantially co-extensive at their base to the respective side panels 22 and 38; they are designed to lock with the major closure flap 56 and not interfere with the camming action already described. Each is arranged to have a base portion 88 which overlaps the respective end tabs 68 and 70 but each is also provided with a tongue portion 90 which snaps under the outer edge of the major flap 56 and adjacent the end tabs 68 and 70. Accordingly, the tongue portion 90 has an edge 92 which forms a notch 94 with an inclined edge 96 leading from the junction of the flap 56 with its respective side wall.

It will be clear that the order of closing on pressure, as illustrated in FIGURES 4A, 4B and 4C, will be as follows: First the major closure flap 56 (FIGURE 4A), followed by the minor closure flaps 58 (FIGURE 4B) and finally the major closure flap 58 (FIGURE 4C). It is to be noted that the co-operating flaps of the subject panel do not form a ledge on the interior which would create an obstruction during end loading with envelopes and thus is an improvement over prior art conventional cartons.

In the embodiment illustrated the carton is provided with a cover 98 hingedly connected to the base panel portion 12 along the score line 14; the cover 98 is substantially rectangular being partially defined by edges 100 and 102 and is provided with a tucking flap 104 hingedly connected along a fold line 106. The tucking flap 104 is defined by edges 108, 110 and an outer edge 112.

In the collapsed condition shown in FIGURE 1 it will be noted that edge 110 is truncated for a major portion of its length adjacent the edge 112 but the remainder of the edge 110 is normally disposed in relation to the edge 112 and fold line 106. The taping or truncation of the edge 110 facilitates the instantaneous closing while the remaining portion holds the flap in position.

The tucking flap 104 has a rectangular aperture 114 which is aligned to correspond with a rectangular aperture 116 in the second base panel 30 on closing the carton. The filling of the envelopes may be arranged in numerical order and the number thereof is observable through the rectangular apertures X and 116. The upper edge 52 of the panel 30 is recessed at 118 to facilitate withdrawal of the tucking flap 104 from the filled carton, also to expose the date of each envelope in turn as it is withdrawn at the appropriate time.

While certain embodiments have been illustrated and described for the purpose of disclosure, it will be understood that the invention is not limited thereto, but contemplates such modifications and other embodiments as may be utilized without departing from the invention.

I claim:

1. A collapsible carton for top end filling comprising a pair of opposed substantially rectangular base panels connected by a pair of opposed substantially rectangular side panels, said carton being collapsed along the junction of one of said base panels and one of said side panels and the diametrically opposed junction of the other of said base panel and the other of said side panel, said carton in the flattened condition having one base panel and one side panel on each side of the flattened carton, closure means at one end of said carton, said collapsible carton being erectible from said flattened collapsed state into an open ended tubular carton, said end closure means being closed in a second step of the erecting machinery, said closure means at one end of said carton end comprising a pair of closure flaps hingedly connected to said base panels with first means on one of said flaps interengageable with second means on the other of said flaps, said first means being offset in relation to said other means whereby on interengagement said one end of said carton is locked in a substantially parallelogram configuration, the side panels thereof being tilted in the direction opposed to the direction of collapse.

2. A carton according to claim 1 wherein said closure means is collapsible by applying pressure thereto.

3. A carton according to claim 1 wherein said first means comprises a tongue on one flap and said second means comprises a notch on said other flap.

4. A carton according to claim 1 wherein said closure flaps are of a width less than the width of their associated base panels.

5. A carton according to claim 1 wherein the other end is collapsible by a top flap hingedly connected to one of said base panels, being of substantially the same length and having a width substantially the same as said side panels and wherein one edge of said top flap normal to said panel is positioned intermediate of the end of said carton in said collapsed condition, a tab hingedly connected to said top flap being of the same length thereof at said connection with said tab, the edge of said tab extending from said normal edge being inclined whereby said tab at its extremity is of reduced length with respect to said top flap.

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