

July 27, 1943.

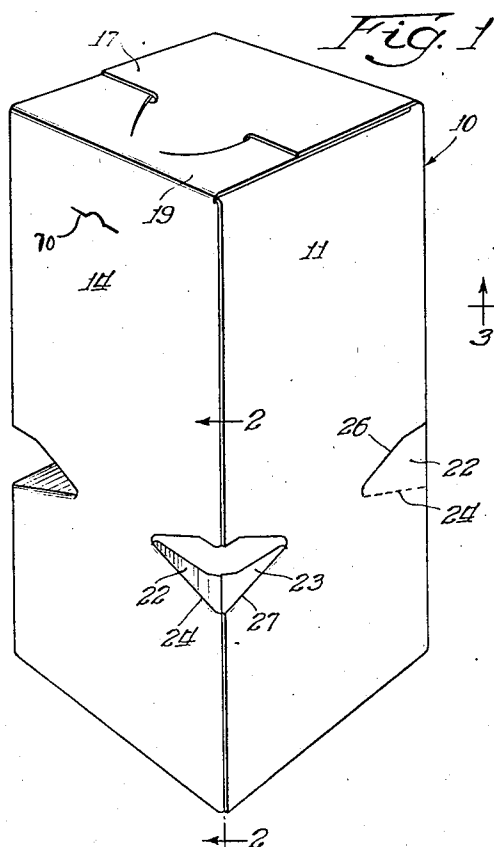
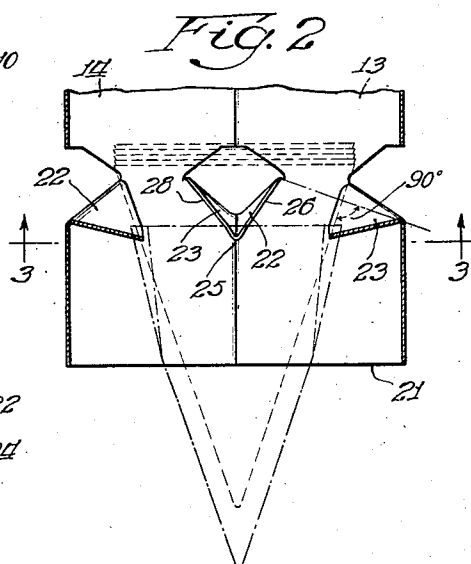
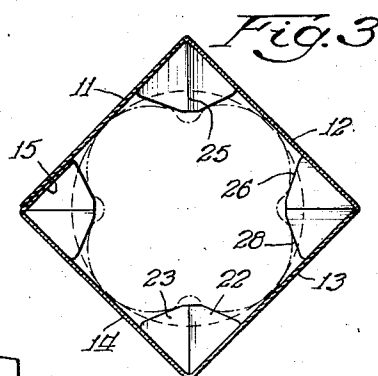
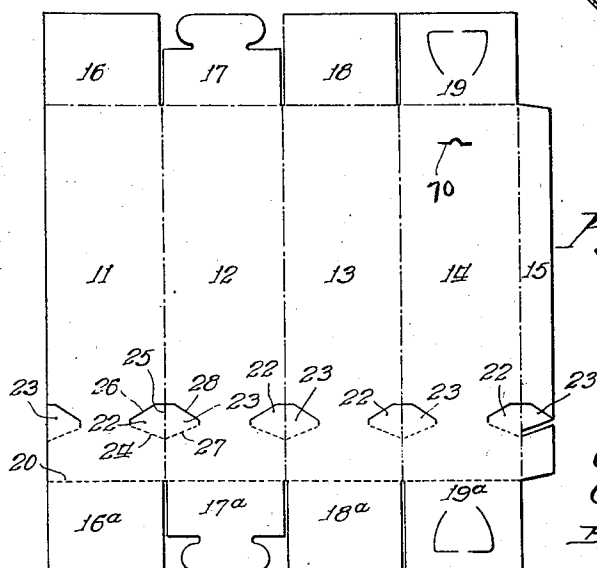
C. R. ROTHE ET AL

2,325,277

DISPENSING CARTON

Filed April 8, 1940

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 6

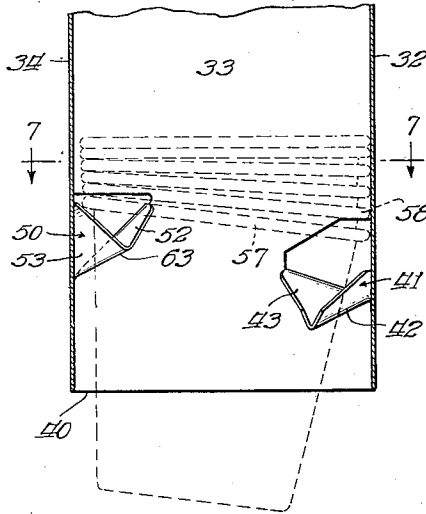


Fig. 7

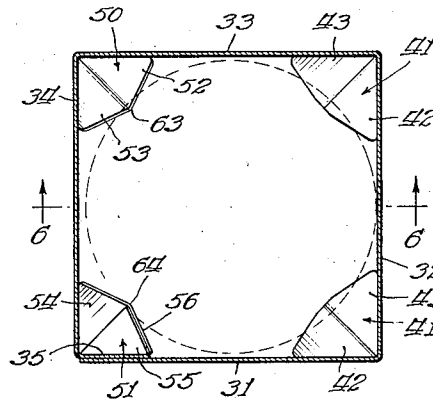
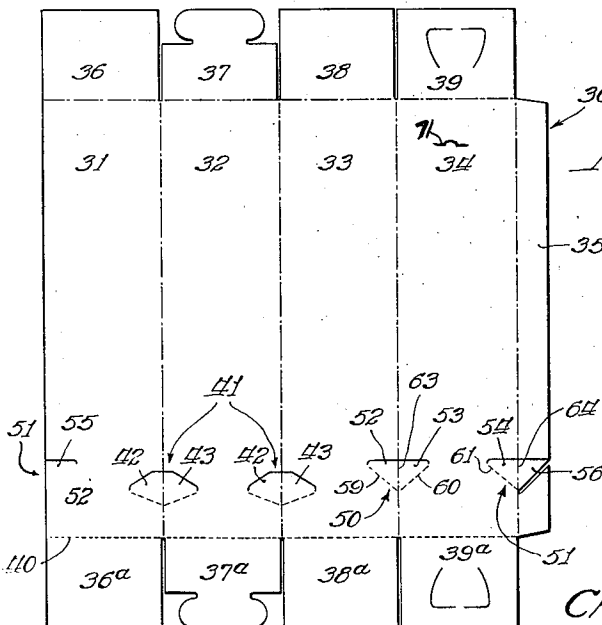


Fig. 5

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UNITED STATES PATENT OFFICE

2,325,277

DISPENSING CARTON

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Application April 8, 1940, Serial No. 328,400

10 Claims. (Cl. 206—56)

The present invention relates to dispensing containers and more particularly relates to containers for dispensing yieldable articles such as paper cups, assembled in nested or telescoping relation.

One object of the present invention is to provide a collapsible dispensing container having parts thereon adapted, in the collapsed condition of the container, to lie within the contour of the container walls, assuring compactness of the collapsed container, such parts being adapted readily to be moved to a position in which the parts can be extended inwardly of the container when it is brought to an expanded condition so that the inwardly extending parts provide retention devices serving to retain a column of nested articles such as paper cups but permitting them to be removed one at a time from the container by grasping the lowermost article by the hand and withdrawing it past the retention devices.

A further object of the invention is to improve and simplify containers of the class described and to provide a form of container that can be packed with articles without special machinery as well as without the necessity of employing skilled operatives. At the same time a form of container is provided that affords ample protection to its contents during storage and shipment and can be adapted for dispensing of its contents with only a very simple operation upon the container at the time it is desired to convert it into its dispensing condition.

To these and other ends the present invention resides in certain combinations and arrangement of parts described below, the novel features of which are defined in the claims hereto appended.

In the drawings:

Fig. 1 is a perspective view of a carton, made in accordance with the present invention, showing part of the retention devices extended inwardly;

Fig. 2 is a section taken on line 2—2 of Fig. 1 looking in the direction of the arrows showing the relative position of the lowermost cup during withdrawal from the carton;

Fig. 3 is a section taken on line 3—3 of Fig. 2 looking in the direction of the arrows;

Fig. 4 is a plan view of the blank which forms the carton of the present invention;

Fig. 5 is a plan view of the blank of a modified form of the present invention;

Fig. 6 is a section taken on line 6—6 of Fig. 7 looking in the direction of the arrows showing the relative positions of the lowermost cup with respect to the remaining cups during removal of the cup from a carton made in accordance with

the modified form of the invention, the type of cup illustrated, having a beaded rim; and

Fig. 7 is a section taken on line 7—7 of Fig. 6 looking in the direction of the arrows.

The present invention, as herein disclosed, comprises a collapsible, tubular container having top and bottom closures and means for dispensing articles one at a time from the container, such means being normally inoperative until such time that it is desired to employ the container as a dispensing container, whereupon the container is converted to dispensing form by the simple operation of pushing inwardly certain parts thereof.

Referring more particularly to the drawings, the container, as illustrated in Fig. 1, comprises a tube 10 of flexible sheet material such as folding paperboard. The container is preferably formed from a single blank as illustrated in Fig. 4 and is suitably cut and scored to provide side wall panels 11, 12, 13 and 14 and an attaching flap 15 on wall 14 by means of which the walls 11 and 14 may be joined together as by means of adhesive.

The top and bottom end closures may be formed by flaps 16, 17, 18, 19, 16a, 17a, 18a and 19a, the flaps 17 and 19 being adapted to interlock in overlying relationship with respect to the flaps 16 and 18, to close the top of the carton. The flaps 17a and 19a likewise are adapted to interlock in overlying relationship with respect to the flaps 16a and 18a, to close the bottom of the carton.

For the purpose of withdrawing cups from the carton, the bottom end of the carton is opened and the bottom closure flaps 16a, 17a, 18a and 19a are removed from their respective side wall panels. To facilitate the removal of said flaps, score line 20 separating the flaps from their body panels, is preferably formed in the nature of a line of severance whereby the flaps may be easily and quickly removed while at the same time, after their removal, a smooth, neatly appearing edge is presented at the bottom of the open carton as indicated at 21 in Fig. 2.

The carton formed from the type of blank shown in Fig. 4 of the drawings is particularly suitable for dispensing conical shaped paper cups having a top edge formed without any bead or extended lip.

Retention elements are formed in the side walls near the bottom of the carton to hold the cups therein until they are desired for use. The retention elements of the present invention comprise pairs of integrally connected triangular segments, indicated at 22, 23 in Fig. 4, the triangular segment 22 being defined by the hinge line 24, the corner forming score line 25 and a free edge

26, and the triangular segment 23 being defined by the hinge line 27, the score line 25 and free edge 28. The hinge lines 24 and 27 diverging from the corner forming score line 25 extend upwardly and inwardly of adjacent side wall panels. The corner forming score 25 in the present blank is disposed in alignment with the score line which separates adjacent side wall panels and which, when the carton is set up, forms a corner of the carton. The free edges 26 and 28 of the triangular segments are formed by cuts extending from the outer ends of the hinge lines 24 and 27 and meeting at the upper end of the score line 25.

The triangular segments thus provided are adapted to be swung inwardly of the carton when adjacent side wall panels are disposed in an angular relationship with each other, to thereby provide cup retaining elements.

In the present instance the retention elements extend inwardly of the carton sufficiently to support a column of nested paper cups as shown in Fig. 2 and Fig. 3. In the case where the cups nest closely and form a relatively compact group, the retention elements are required to support a considerable weight. Furthermore, due to the tapered shape of the cups, as illustrated, the downward pressure exerted by the column of cups held in the carton has a lateral component tending to press the retention elements outwardly. For that reason the hinge lines 24 and 27 are preferably formed in angular relationship with the corner forming score line 25 such that when the retention elements are swung inwardly of the carton, the edge of the element formed along score line 25 will project inwardly below a line normal to the contacted surfaces of the cups contained in the carton as illustrated in Fig. 2.

To minimize the amount of material struck from the side wall panels to form the retention elements shown in Fig. 2, it is desirable to have the free edges 26 and 28 of the triangular segments extend downwardly from the upper end of the corner forming line 25 as shown in Fig. 4. The angles defined by the edges 26 and 28 with the score line 25 are also preferably formed to provide supporting contact between the cups in the carton and substantially the entire free edges of the triangular segments. It is apparent that the triangular segments 22, 23 provide duplicate engaging edges 26, 28, either one of which can function to give a column of cups adequate support so that even if the carton should be subject to a slight distortion there will be at least one segmental edge of each pair engageable with the side of a contained cup, in which case the other segment in the pair functions principally as a holding or limiting means for the engaging segment thus keeping it in proper engaging relationship with the cup.

As shown in Figs. 2 and 3, the distance between the cup supporting portions of opposite retention elements is less than the diameter of the top portion of the contained cups, thereby, as above indicated, providing means to retain the paper cups in the carton. It is to be noted, however, that due to the fact that the present cups for which this carton is designed are made of resilient material, it is possible to withdraw the lowermost cup from the end of the carton by grasping the bottom of the cup and pulling it with sufficient force to cause a distortion of its upper portion, as shown in Fig. 3. Due to the fact that the cup immediately above the one being withdrawn is, because of the nesting arrangements of the cups, interiorly supported in

such a manner as to prevent distortion thereof, said cup is retained in the carton until it, in turn, is grasped and manually withdrawn.

When it is desired to pack paper cups of the type having a beaded upper edge projecting outwardly beyond the side wall of the cup, such as a frusto-conical type of cup, the retention elements are preferably arranged so that two adjacent elements are located somewhat above the other pair of adjacent elements. Such an arrangement is embodied in a modified form of the present invention. A blank 30 of a carton made in accordance with the modified form is shown in Fig. 5.

The blank 30 is suitably cut and scored to provide side wall panels 31, 32, 33 and 34 and an attaching flap 35 on wall 34 by means of which the walls 31 and 34 may be joined together as by means of adhesive. The top and bottom end closures may be formed by flaps 36, 37, 38, 39, 36a, 37a, 38a and 39a, the flaps 37 and 39 being adapted to interlock in overlying relationship with respect to flaps 36 and 38, to close the top of the carton, and the flaps 37a and 39a likewise being adapted to interlock in overlying relationship with respect to the flaps 36a and 38a, to close the bottom of the carton. The score line 40, defining the bottom closure flaps, is preferably formed in the nature of a line of severance to facilitate the removal of said flaps from the carton prior to the dispensing of the cups contained therein.

The pair of adjacent retention elements 41, 41 are each formed of the triangular segments 42, 43 and preferably substantially identical to the retention elements formed by the triangular segments 22 and 23.

The retention elements 41, 41 are arranged somewhat nearer the bottom of the carton than the other two retention elements indicated at 50, 51, for purposes later to be described. The element 50 comprises triangular segments 52, 53 and the element 51 comprises triangular segments 54, 55.

For purpose of forming the blank shown in Fig. 5 into tubular shape, the attaching flap 35 is adhesively secured to the side wall panel 31, in which case the triangular segment 56 of the attaching flap 35 is secured to the similar triangular segment 55 of panel 31. Together, the segments 56 and 55 constitute a segment similar to segment 53, and with triangle segment 54 comprise the retention element 51 shown in Fig. 7. As shown in Fig. 5, the triangular segment 56 of the attaching flap 35 is defined by the corner-forming score line 64, a horizontal cut, and a slot disposed angularly with respect to the score line 64. Said slot is provided for the purpose of facilitating inward deflection of the retention element 51, it being apparent that triangular segment 56 will be adapted to swing with its adhesively attached triangular segment 55, about the hinge line 62 when the blank has been formed into tubular shape. For the same purpose a similar slot is provided in the attaching flap 15 of the type of blank shown in Fig. 4 to define one edge of the triangular segment formed in said flap 15.

As the frusto-conical type of cups, for which the modified form of carton is designed, and which are indicated by dotted lines in Fig. 6, are formed with beaded rims, they offer a greater resistance to distortion than in the case of the conical shaped cup having no reinforcement around its rim. Due to the fact that the frusto-conical type of cup resists distortion, to cause a

separation of the lowermost cup 57 in the carton from the cup 58 immediately above it and nested therein, it has been found to be advantageous to cause the lowermost cup 57 upon withdrawal to move somewhat out of alignment with cup 58. To obtain this relative movement between cups 57 and 58, the retention elements 41, 41 are spaced nearer the bottom of the carton than the retention elements 50 and 51, thereby as the cup 57 is grasped and withdrawn from the carton, said cup is forced sidewise when it engages the elements 50 and 51, as shown in Fig. 6. By reason of the close nesting of the cups contained in the carton, sidewise movement of the cup 58 is somewhat resisted and thereby separation of said cups 57 and 58 is facilitated. When the lowermost cup assumes a position where it is engaged by each of the retention elements 41, 41, 50 and 51, there is sufficient separation between the cups 57 and 58 to permit the complete withdrawal of cup 57, while at the same time cup 58 is retained by the retention elements until it, in turn, is manually withdrawn from the carton.

Due to the fact that the frusto-conical shaped cups are commonly provided with an outwardly extending peripheral projection such as a bead-like rim to reinforce the cup, it has been found desirable to form the elements 50 and 51 such that they are more rigid than the type of elements used in dispensing cartons adapted for conical shaped cups having no projections on their rims. It has also been found that, due to the projections on the frusto-conical type of cups, there is no substantial tendency for the elements 50 and 51 to be forced outwardly for the reason that the projecting portions tend to exert an effective downward force on said elements. Therefore to provide for the desired rigidity in the elements 50 and 51, the hinge-forming score lines indicated at 59, 60 and 61, 62 are preferably disposed in an angular relation to the corner-forming score lines 63 and 64, respectively, such that when the retention elements are swung inwardly, the score lines 63 and 64 will be directed inwardly from the corner of the carton and upwardly somewhat above the horizontal, as illustrated in Fig. 6. In the present instance the free edges of the retention elements 50 and 51 are formed by horizontal cuts.

For the purpose of conveniently suspending the container as from a nail or hook on a wall, a slit or opening 70 is preferably provided in one of the walls herein illustrated as wall 14, see Figs. 1 and 4. A similar slit or opening 71 is provided in wall 34, see Fig. 5.

The use and operation of the container of the present invention will now be described. The containers are formed into open end collapsible tubes with the retention element lying within the plane of the container walls, as illustrated at the right hand corner of the container as shown in Fig. 1. They are shipped to the packer in flat condition and the packer will fill the container with the desired number of cups in nested formation as suggested in Figs. 2 and 6, where small groups of nested cups are illustrated. The closure flaps of the container are then secured in closed position and the container is then ready for shipment to the user.

A convenient way of conditioning the filled container for dispensing the cups is to first press inwardly upon the retention elements so that they will assume the position as illustrated in Figs. 2 and 6, depending upon the form employed.

The bottom flaps are then torn off along the weakened line 20 or weakened line 40, as previously described. The container is then ready to be suspended on a convenient nail or hook after which it is ready for use as a cup-dispensing container.

From the foregoing it is clear that, due to the construction and arrangement of the parts of the retention elements, when the retention elements are in an inwardly directed position, as illustrated in Figs. 1, 2 and 3, the column of cups shown in dotted lines in Fig. 2 will be supported by the retention elements due to the manner in which these elements bear against the sides of the lowermost cup. The weight of the column of cups is thus supported by the retention elements. A relatively heavy weight of cups in column formation can be supported by the retention elements as there is no likelihood that any of the retention elements will be forced to its original position where its parts will lie within the plane of the container walls. This is due to the fact that the retention elements are so formed that the hinge line between the two segments, as shown at 25, Figs. 3 and 4, will assume a position in respect to the cups which is less than a right angle. In other words, the hinge line 25 is so disposed as to engage the side of the cup at an angle which is other than normal or at right angles to the side of the cup, whereby the downward force exerted upon the retention elements by the cups will produce a lateral force which is a component of the downward force tending to swing the retention elements still further away from their original position within the plane of the container walls. The effect of this tendency of the retention elements to swing down instead of up, as illustrated in Fig. 2, is that the portions at the hinge line 25 of the retention element swing about the point at which this line joins the fold line between the adjacent side walls and, as the corners of the container are relatively rigid, any excessive pressure imposed upon the retention elements to swing them down, as illustrated in Fig. 2, will produce an inward deflection of the walls to which the retention elements are connected at portions of such walls remote from the fold lines therebetween. Thus any excess pressure imposed upon all of the retention elements will cause inward deflection of portions of the walls intermediate their edges. This tendency toward inward deflection of the walls will produce a gripping effect upon the column of cups so that, within the limits of the strength of the material employed, the gripping force exerted upon the column of cups will be in more or less direct proportion to the weight of the column.

In the form of the retention elements illustrated in Figs. 5, 6 and 7 it is to be observed that the upper retention element 50 offers more resistance to the column of cups than is the case with the retention element 41, this being due to the fact that when the projecting portions of the cups come into contact with the edges of the element 50, there is a tendency to produce an inward swinging movement in the direction of the line which is normal to the line of the corner of the container. This tendency causes the passageway between the retention elements to become more constricted as the elements approach the horizontal and at the same time the intermediate portions of the walls are drawn somewhat inwardly due to connection between the segments of the retention elements and the

side walls as explained above. The upwardly directed edges of the retention elements in this form also tends to create somewhat more friction that is the case with the downwardly projected retention elements.

When the form of retention element, as illustrated at 50 in Fig. 6, is employed there is no tendency for the retention elements to be forced into their original position in the plane of the container walls in the angle illustrated, particularly with cups having projecting lip portions, for the reason that before the pressure exerted by the side of the cup against the retention elements becomes great enough to produce any appreciable outward component of force upon the retention element, the projecting lip of the cup will engage the retention element and tend to draw its edges in the direction of movement of the cup being withdrawn.

The triangular segments are each preferably so shaped as to provide for contact with the side portions of the cups, thus even if one of a pair of segments does not contact the cup side the other segment will do so. In such a case the segment not contacting a cup side nevertheless performs the necessary function of holding the companion segment in cup-engaging position.

In both forms of the carton disclosed herein and made in accordance with the present invention the retention elements, being formed of hingedly connected triangular segments, provide supporting elements that may be formed of relatively light weight paperboard while at the same time being more sturdy than other types of retaining elements heretofore used.

While the present description sets forth certain preferred embodiments of the invention, numerous changes may be made in the construction without departing from the spirit of the invention and it is, therefore, desired that the present embodiments be considered in all respects as illustrative and not restricted, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

We claim:

1. A container for dispensing paper cups comprising a polygonal tube of flexible sheet material, and retention elements spaced inwardly from one end of the tube, said elements being formed integrally with the material of the tube at the corners and comprising two substantially triangular segments, one in each of two adjacent walls of the container, hingedly connected to each other along a line defining the corner of the tube, said segments being each hinged to a line within the lateral edges of their respective walls disposed at an angle to the hinge line between the segments, and said segments being unconnected to the side walls along their remaining side, whereby said hingedly connected segments can be moved to an inwardly directed position.

2. A container for dispensing paper cups comprising a polygonal tube of flexible sheet material, and a retention element in each corner of the tube spaced inwardly from one end thereof, at least one of said retention elements being disposed farther from the end of the tube than another of said retention elements, said elements being formed integrally with the material of the tube at the corners and comprising two substantially triangular segments, one in each of two adjacent side walls hingedly connected to each other along a line defining the corner of the tube, said

segments being each hinged to a line within the lateral edges of their respective walls disposed at an angle to the hinge line between the segments, and said segments being unconnected to the side walls along their remaining side, whereby said hingedly connected segments can be moved to an inwardly directed position.

3. A container for dispensing paper cups comprising a polygonal tube of flexible sheet material, and a plurality of retention elements spaced inwardly from one end of the tube, said elements being formed integrally with the material of the tube at the corners and comprising two substantially triangular segments one in each of two adjacent side walls hingedly connected to each other along a line defining the corner of the tube, said segments being each hinged to a line within the lateral edges of their respective walls disposed at an angle to the hinge line between the segments, said side walls being formed with cuts across the corner of the tube defining a free edge for the upper portion of each of the segments whereby the segments are disconnected from the side walls along their remaining sides, adapting them for joint swinging movement to an inwardly directed position.

4. A container for dispensing paper cups comprising a multi-walled tube of flexible sheet material, a retention element spaced inwardly from one end of the tube, said element comprising a substantially triangular portion integral with one wall and hinged to a line disposed at an angle to the edge of the wall, said portion being unconnected to its wall along its remaining side, whereby the portion of the retention element adjacent the edge of the wall can be swung inwardly of the tube, and means for limiting the inward swinging movement of said retention element.

5. A container adapted for dispensing cone-shaped paper cups, said container comprising hingedly connected side walls of flexible sheet material, and a plurality of retention elements spaced inwardly from one end of the container adapted to support a vertically disposed column of nested, cone-shaped paper cups, each of said retention elements being formed integrally with the material of the container at the corners and comprising two substantially triangular segments, one in each of two adjacent walls hingedly connected to each other along a line defining a corner of the container, said segments being each hinged to a line within the lateral edges of their respective walls disposed at an angle to the hinge line between the segments, said side walls being formed with cuts across the corner of the container defining an upper free edge for the pair of segments whereby the segments are disconnected from the side walls along their remaining edges adapting them for joint swinging movement away from the plane of the container walls to an inwardly directed position, the line of connection between said triangular segments, when the triangular segments are placed in an inwardly directed position, being disposed inwardly of the corner of the container and at an acute angle to the wall of a cone-shaped, downwardly tapered, cup contained therein, whereby any lateral force caused by a downward force being exerted upon the contained cup tending to move it past the retention element will tend to move the retention element farther away from its original position within the plane of the container walls.

6. A container adapted for dispensing tapered paper cups, comprising inter-connected

side walls of flexible sheet material, and a plurality of retention elements spaced inwardly from one end of the container adapted to support a vertical column of nested paper cups by engaging laterally against the lowermost of said cups, each of said retention elements being formed integrally with the material of the container at the corners and comprising two substantially triangular segments, one in each of two adjacent walls hingedly connected to each other along a line defining a corner of the container, said segments being each hinged to a line within the lateral edges of their respective walls disposed at an angle to the hinge line between the segments, said side walls being formed with cuts across the corner of the tube defining upper free edges for the segments whereby the segments are disconnected from the side walls along their upper edges, adapting them for joint swinging movement to an inwardly directed position, the angle between the hinge lines of the triangular segments being such that the line of connection between said triangular segments, when the triangular segments are placed in an inwardly directed position, is disposed inwardly of the corner of the container and upwardly from the horizontal to thereby give rigidity to the retention element.

7. A container for dispensing paper cups and the like, comprising a tube of flexible sheet material having four wall panels and four retention elements spaced inwardly from one end of said tube, one pair of adjacent retention elements being disposed farther from said end of said tube than the other pair of said retention elements, each of said elements being formed integrally with the material of the tube at a corner thereof and comprising two substantially triangular segments, one in each of two adjacent wall panels, hingedly connected to each other along a line defining said corner, said segments being each hinged to a line within the lateral edges of their respective wall panels disposed at an acute angle to the hinge line between the segments, and said segments being unconnected to their respective wall panels along their remaining sides, whereby said hingedly connected segments can be moved to an inwardly directed position.

8. A container for dispensing paper cups and the like, comprising a tube of flexible sheet material having a plurality of wall panels, and a plurality of retention elements, each of said elements being formed integrally with the material of the tube at a corner thereof and comprising two segments, one in each of two adjacent wall panels, hingedly connected to each other along a line defining said corner, said segments being each hinged to a line extending upwardly and outwardly from said corner within the lateral edges

of their respective wall panels, and said segments being unconnected from their respective wall panels along a line extending from the outer end of said last named hinge line upwardly and inwardly toward said corner, each of said retention elements in operative position being an inwardly pressed portion integral with the material of the tube at a corner thereof.

9. A container for dispensing paper cups and the like, comprising a tube of flexible sheet material having four wall panels and at least four retention elements, each of said elements being formed integrally with the material of the tube at a corner thereof and comprising two segments, one in each of two adjacent wall panels, hingedly connected to each other along a line defining said corner, said segments being each hinged to a line within the lateral edges of their respective wall panels, and said segments being unconnected to their respective wall panels along their remaining edges, each of said retention elements in operative position being an inwardly pressed portion integral with the material of the tube at a corner thereof, and being of such configuration as to present but two closely adjacent points of contact with the cups being dispensed, one of said contact points being on each side of said hinge line.

10. A container for dispensing paper cups and the like, comprising a tube of flexible sheet material having four wall panels and at least two pairs of retention elements in said tube, one pair of adjacent retention elements being disposed farther from the dispensing end of said tube than another pair of said retention elements, each of said elements being formed integrally with the material of the tube at a corner thereof and comprising two polygonal segments, one in each of two adjacent wall panels, hingedly connected to each other along a line defining said corner, the segments of one of said pairs of retention elements being each hinged to a line extending upwardly and outwardly from said corner within the lateral edges of their respective wall panels and unconnected to their respective wall panels along a line extending from the outer end of said last named hinge line upwardly and inwardly toward said corner, and the segments of another pair of retention elements being each hinged to a line extending upwardly and outwardly from said corner within the lateral edges of their respective wall panels and unconnected to their respective wall panels along a line extending from the outer end of said last named hinge line toward said corner in a direction normal thereto, each of said retention elements in operative position being an inwardly pressed portion integral with the material of the tube at a corner thereof.

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