

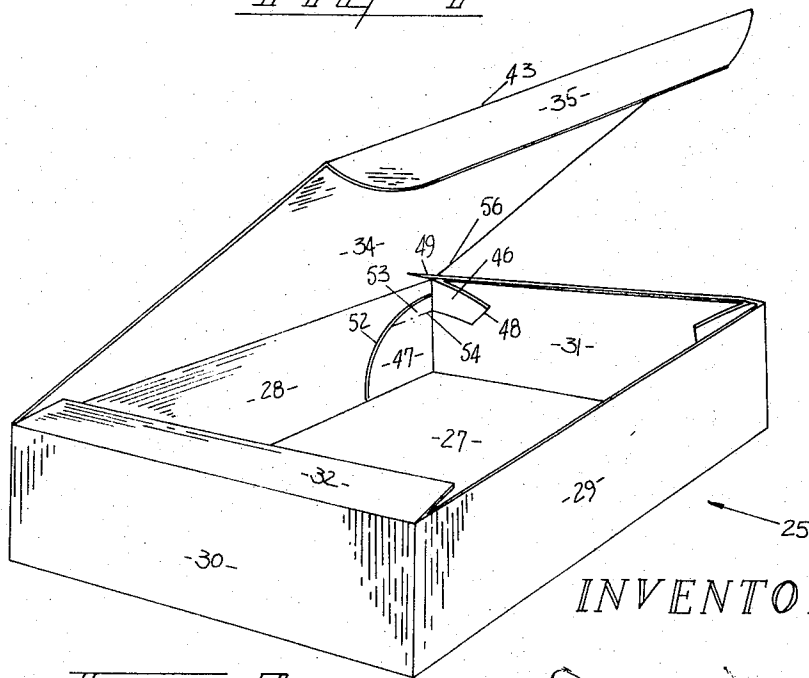
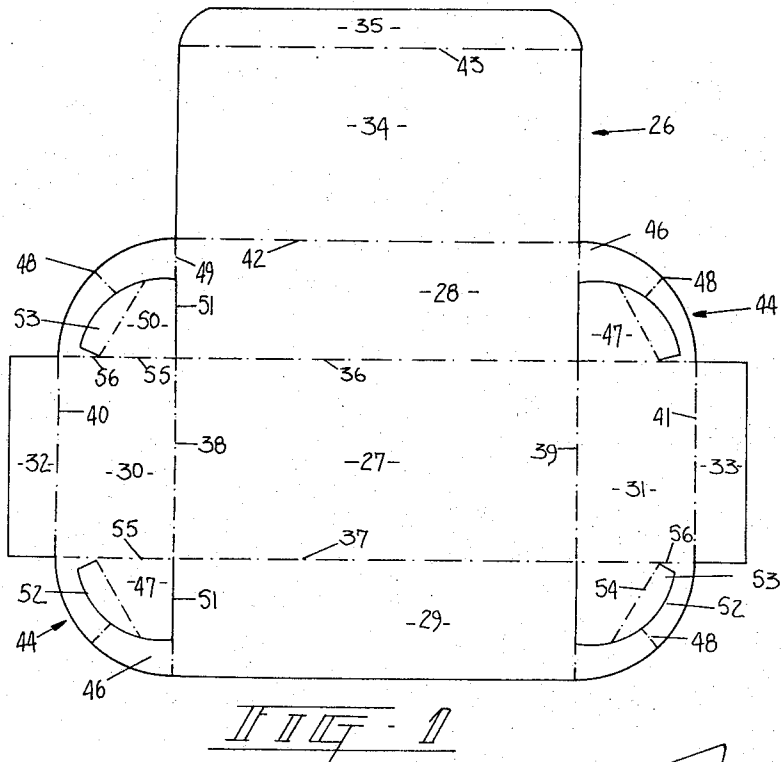
Dec. 19, 1967

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3,358,901

Filed May 12, 1966

3 Sheets-Sheet 1



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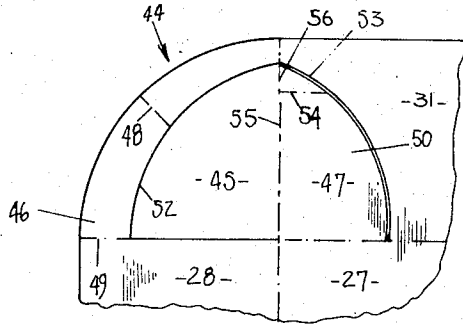


FIG. 3

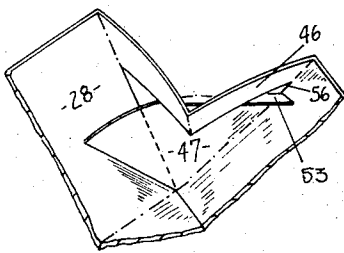


FIG. 4

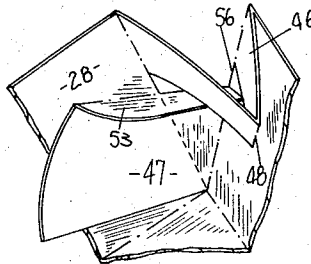


FIG. 5

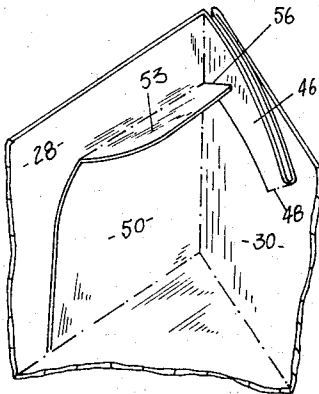


FIG. 6

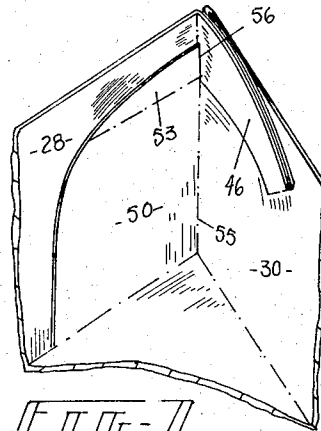


FIG. 7

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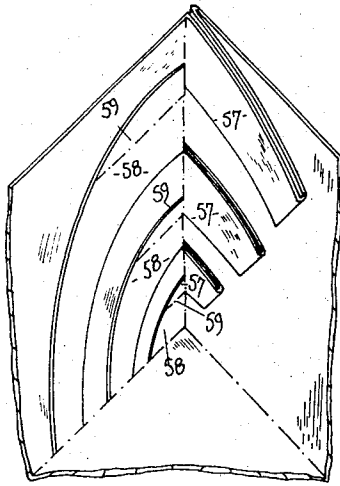


FIG. 8

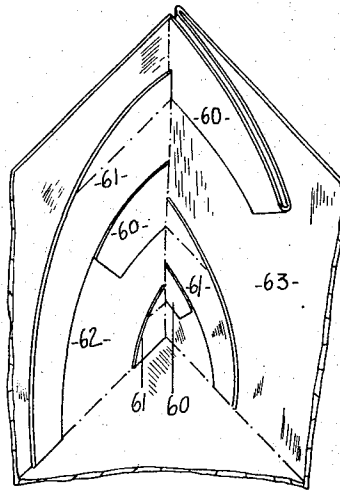


FIG. 9

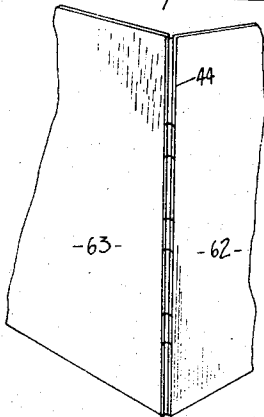


FIG. 10

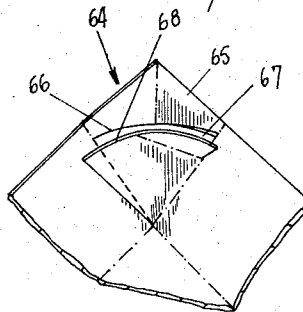


FIG. 11

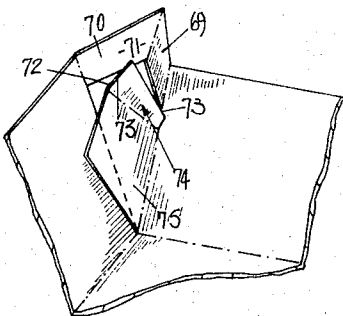


FIG. 12

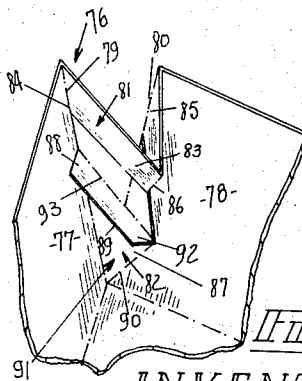


FIG. 13

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ABSTRACT OF THE DISCLOSURE

The invention refers to a container made from a one-piece pre-cut blank formed of a bottom wall provided with integral upright walls and extension members integrally connecting the adjacent upright walls to one another. Each of the extension members are composed of a cut-out portion so as to complete an overlocking member that is an integral part of the adjacent upright walls and an underlocking member that is integral with one of the adjacent upright walls, the overlocking member and the underlocking member engage with one another so as to interlock the adjacent upright walls together in their erected position and from the inside of the container.

The invention relates to improvements in containers as described in the present specification and illustrated in the accompanying drawings that form a part of the same.

The invention consists essentially in the novel features of construction as pointed out broadly and specifically in the claims for novelty following a description containing an explanation in detail of acceptable forms of the invention.

In the past, the manufacture of cartons and other containers has been constructed with many different types of interlocking arrangements for connecting the end and side walls together and to form the necessary corners. This has been accomplished by the formation of slits or slots through the end walls, side walls or flaps articulating from the side or end walls, or various combinations thereof, and the formation of hook-like members or lugs emanating from adjacent locking flaps, side walls or end walls, the slits or slots and the corresponding hook arrangements being so shaped that when the container is being folded they will slidably engage with one another and then by pulling the connecting walls outwardly from the slitted or slotted portions and thereby presumably be prevented from unlocking themselves or disengaging with the slits or slots of the adjacent walls or articulating flaps.

These types of structures necessitate the making of unsightly cuts or incisions in the wall structures, special shaping and cutting of the locking flaps which are integral with certain of the upright walls and are articulated so that they will engage with and penetrate through the incisions formed in the adjacent upright walls for locking the adjacent walls to one another. Such construction defaces the appearance of the container, reduces materially the printing and advertising space that could otherwise be used on the surfaces of the container, and in many instances, weakening the strength of the wall structures; furthermore it is necessary to have such interlocking means emanate from the exterior of the container and thereby adding to the inconcinnity of the container.

It is therefore the purpose of this invention to eliminate such and other objectionable features that have been found in former containers and simultaneously remove all interlocking arrangements from the outside of the container and place them inside of the container and still maintain their integrality with the container, the whole

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container being made from a single one-piece pre-cut blank.

Among the objects of the invention is to devise a container in which the upright walls will be void of any slits, slots or crease lines, and thereby increasing the strength of the wall structure and to effect a positive interlocking of the adjacent upright walls thereof without marring the outside appearance of the container or interfering with any contents that may be placed in the container or carton.

Another object of the invention is to devise interlocking means that will be located on the inside of any predetermined type of container or carton that is being formed, and that will be an integral part thereof for locking adjacent upright walls to one another to complete the erection of the container or carton.

Another object of the invention is to construct a pre-cut blank having inside locking arrangements integral therewith and which is adapted to be formed into a container through automation means, semiautomation means, manual means, or a combination of both automatic and manual means.

Still another object of the invention is to devise interlocking means that will be integral with the container whereby the weight of the contents of the container will have the force thus created, proportionately distributed throughout the wall structure of the container and add to the securement of the adjacent upright walls to one another and further increase the effectiveness of the interlocking means through maintaining a constant pressure thereon and acting as a safety catch to aid in keeping the interlocking means in constant engagement and minimize the possibility of their disengagement.

A further object of the invention is to assure a close upright abutment of the internally locked walls of a container regardless of its configuration, such as being angular, triangular, rectangular, arcuate, square or any other shape having more than four upright adjacent walls for stiffening the container in all directions, and to avoid the saggy look or distorted appearance of the container which is so often noticeable in containers in which the contents thereof have caused a force, pressure or a drag against or on the walls, and it may be further apparent when filled containers are placed on top of each other.

A still further object of the invention is to construct a container made from a pre-cut blank, with the minimum waste of material, that will be easy to assemble either by mechanical or manual means and in which the walls will have integrally internal self-locking means for fastening the adjacent walls to one another.

A still further object of the invention is to make a container that will be capable of withstanding reasonable pressures from any direction and maintain its uniform configuration at all times when once assembled and in its locked position.

Still a further object of the invention is to devise a container in which no adhesive or other securing means need be added to the blank or in the assembly of the container for adding strength to the structure, as has been done in the past, but in place thereof to effect the necessary strength and positive locking of the upright walls together through the particular structure of the inside locking means and corner connections of the container and which form an integral part of the blank from which the container is assembled.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein preferred forms of the invention are clearly shown.

In the drawings:

FIGURE 1 is a plan view of the pre-cut blank from which the container is formed.

FIGURE 2 is a perspective view of a container made from the pre-cut blank and illustrating the inside interlocking of the adjacent upright walls and the undefaced and unbroken surfaces of the upright walls.

FIGURE 3 is an enlarged fragmentary view of one corner of the pre-cut blank illustrating an inside locking unit having a cut-out portion from which the interlocking members are made and showing one interlocking member folded away from the cut-out portion to depict the other interlocking member integrally joining the adjacent walls to one another.

FIGURE 4 is a fragmentary perspective view of the corner of the pre-cut blank as shown in FIGURE 3 illustrating the commencement of the raising of the adjacent walls toward one another for an upright position and having one of the interlocking members overlapping the other interlocking member.

FIGURE 5 is an enlarged fragmentary perspective view illustrating a further step in the erection and interlocking of the adjacent walls and showing the overlapping locking member gradually being moved to one side of the other locking member and which has its locking lip bent inwardly.

FIGURE 6 is an enlarged fragmentary perspective view illustrating a still further step in the erection and interlocking of the adjacent walls and showing the former overlapping locking member free from engagement with the other locking member and in abutting position with one wall and extending through the gap located between the locking lip of the other locking member and the wall to be abutted, the locking lip now being bent in an upward direction.

FIGURE 7 is an enlarged fragmentary perspective view illustrating a final step in the erection and interlocking of the adjacent walls and showing the locking members interlocked with one another and the adjacent walls and maintaining the close abutting rigidity of the adjacent upright walls through the integral interlocking of the adjacent walls on the inside of the container.

FIGURE 8 is an enlarged fragmentary perspective view of a corner of an erected container illustrating the integral inside locking means in the form of a plurality of locking units located below one another and suitably spaced apart to interlock the adjacent upright walls together, and particularly adaptable for containers having depth.

FIGURE 9 is an enlarged fragmentary perspective view similar to FIGURE 8, with the exception that the locking units of the integral locking means are arranged to alternately engage with one or the other of the adjacent upright walls.

FIGURE 10 is an enlarged fragmentary perspective exterior view illustrating a corner of a container utilizing integral multiple locking means.

FIGURE 11 is an enlarged fragmentary perspective view of a corner of a container illustrating a modified form of integral interlocking means.

FIGURE 12 is an enlarged fragmentary perspective view similar to FIGURE 11, illustrating a further modification of the integral locking means.

FIGURE 13 is an enlarged fragmentary perspective view of a corner of an erected container illustrating the integral inside interlocking means forming a part of a gusset arrangement for joining and interlocking the upright adjacent walls to one another.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings, the integral inside or inner interlocking means is shown as being a part of a container as illustrated in FIGURES 1 to 6, but it is to be understood that the inside interlocking means for securing the adjacent upright walls to one another of a container or carton, with modifications and ramifications, is adapted to form an integral part of many other types of containers

or cartons without departing from the spirit of the invention.

In FIGURES 1 to 6, the container, as indicated by the numeral 25, is formed from a pre-cut blank 26 having the bottom wall 27, the side walls 28 and 29, the end walls 30 and 31 provided with or without the dust flaps 32 and 33, and the cover wall 34 with the closure flap 35, all separated from one another by the crease or folding lines 36, 37, 38, 39, 40, 41, 42 and 43.

The side walls and the adjacent end walls are integrally connected to one another by the extension members 44, the outer edges of which are arcuate in shape. Each of the extension members 44 has a cut-out portion 45 from which is formed the integral inside interlocking means consisting of an overlocking member 46 and an underlocking member 47.

The overlocking member 46 is in the shape of an arcuate hinged strap having an approximate centrally positioned transverse folding crease line 48 and is integral with the adjacent corner portions 49 of the adjacent side and end walls, and what are termed the adjacent upright walls in the erected or partially erected position of the container.

The underlocking member 47 is in the shape of a locking flap 50 hingedly and integrally secured to one of the upright walls, such as an end wall, and is separated from an adjacent upright wall, such as a side wall, by a slit 51. The outer edge or border 52 of the locking flap is arcuate in shape to follow the contour of the lower edge or border of the arcuate-shaped strap 46 and is in abutting position therewith.

A bendable locking lip or tongue 53 is formed out of a predetermined section of the arcuate portion of each of the locking flaps 50 and is creased off from that section by the folding line 55 located between the locking flap 50 and the end wall 30 and terminates at the outer edge or border 52 of the locking flap and which is beyond the location of the folding crease line 48 of the overlocking member 46. The locking lip 53 is separated from the end wall by the slit 56, and this slit, with the folding line 55, completes the locking lip construction.

In the erection of the container, the pre-cut blank is introduced into a container forming machine which raises the end and side walls towards and into an upright position, and the overlocking member and the underlocking member are directed inwardly of the container, and the locking lip 53 is bent into an offset position from the locking flap, while the hinges of the strap of the overlocking member 46, as they are drawn inwardly, have the tendency to come closer together until they finally abut one another.

In FIGURE 4, the fragmentary view illustrates the adjacent walls being gradually raised towards an upright position, with the overlocking member 46 and the underlocking member 47 folding in an inward direction inside the container being erected. At this stage, the hinged strap, forming the overlocking member 46, extends edgewise in an expanded V-shape across and overlaps the locking lip 53 that is being bent in a lateral direction away from the integral locking flap 50, which forms the underlocking member 47.

The next stage, as shown in FIGURE 5, the adjacent walls are now being brought into more of an upright position, the locking flap is nearing its abutment position with the inside wall, such as the side wall, and the contracting V of the hinged strap narrowing while getting closer to engaging or abutting position with the adjacent wall, such as the end wall.

The further stage of the inside interlocking together of the adjacent walls, to be erected, is shown in FIGURE 6, where it will be noted that the locking flap 50 is in abutting position with the side wall 28, the locking lip 53, although still projecting inwardly at an angle, is free from engagement by the overlapping position of the hinged strap which is now taking its engagement or abutment

position with the end wall 30 and also engages with the slit 56 formed between the locking lip and the end wall, and thus interlock the adjacent side and end walls, or what could now be called the adjacent upright walls to one another from the inside of the container.

The final stage for the interlocking and securement of the adjacent upright walls to one another from the inside of the container that is erected, is shown in FIGURE 7, where the locking flap is in parallel abutment with one of the upright walls, the angle of the locking lip is in an approximate vertical position so as to have its vertical edge, that is separated from the other adjacent upright wall by the slit 56, to engage with the inner face of the hinged strap, which has now taken its position in the slit 56 and is in abutment with the other upright wall, thereby completing an inside self-locking means for fastening the adjacent walls to one another.

In FIGURES 1 to 7, the integral inside interlocking means has been illustrated and described as being applied to a container of medium depth and in which only a single integral and inside interlocking unit is necessary to form the juncture of any two adjacent upright walls of the container and for their rigid securement and interlocking into a one-piece container.

Where the integral inside interlocking means is to form a part of a container having a greater depth, it may consist of a multiple of integral inside interlocking units suitably spaced apart and below one another, as illustrated in FIGURE 8. In this instance, each of the inside interlocking units is made of an integral inside overlocking member 57, in the shape of an integral hinged strap, and an integral inside underlocking member 58, the latter having an integral locking lip 59. These integral inside overlocking and underlocking members are integral with the adjacent upright walls and are interlocked with one another, as similarly illustrated and described for the single integral inside interlocking units, for the rigid securement and fastening of the adjacent upright walls of the container.

In FIGURE 9, a slight variation of the arrangements of the multiple inside integral interlocking units is shown for the securement and fastening of the adjacent upright walls. Each set of the integral interlocking units is formed of an overlocking member 60 and an underlocking member 61 that are alternately arranged in such a way that the actual interlocking of the two members are arranged to abut the inner face of one adjacent upright wall 62, while the next set of the integral interlocking units is arranged to interlock together and abut the inner face of the other adjacent upright wall 63, and such changes of arranging the positioning of the interlocking means could be made in accordance with the requirements and type of container that is to be used.

In FIGURE 10, the exterior fragmentary portion of the container, as illustrated in FIGURES 8 and 9, is shown to depict the smooth juncture of the adjacent upright walls 62 and 63 that are rigidly secured and locked to one another by the inside interlocking means that are an integral part of the container, and to show the unbroken surfaces of the upright walls, giving full scope for illustrative and descriptive matter to be placed thereon.

The extension members 44 that integrally connect the side walls and the end walls to one another are actually constructed to form the integral inside interlocking means, and each consists of the overlocking member, in the shape of a hinged strap and underlocking member in the shape of a locking flap with an integral locking lip.

As previously described and illustrated, the outer and inner edges of the hinged strap are arcuate in shape as is also the outer edge of the locking lip and accompanying locking flap formed in a similar arcuate curvature, but as shown in FIGURE 11, this is not necessary, as it will be seen that the outer contour 64 of the hinged strip 65 may be right-angular in shape and its inner contour 66 arcuate in shape, while the outer contours of the locking

lip 67 and the accompanying locking flap 68 will be similar to the inner contour edge of the hinged strap. In FIGURE 12 the only variance from FIGURE 11 is that the outer contour and the inner contours 69 and 70 of the hinged strap 71 are right-angular and the outer contours 72 and 73 of the locking lip 74 and its integral locking flap 75 are shaped to follow the contours of the hinged strap 71.

A further modification of the invention is illustrated in FIGURE 13, in which each of the interlocking units, that secure the adjacent upright walls to one another to complete the container, is formed of an extension member 76 that is integral with the ends of an adjacent side wall 77 and end wall 78 and is inwardly foldable therefrom through the formation of the crease or fold lines 79 and 80, which separate the extension member from the adjacent side and end walls. Each of the extension members consists of an overlocking member 81 and an underlocking member 82.

The overlocking member is formed of a hinged strap 83 having its ends integral with and foldably separated by the crease lines 84 and 85 to the upper corner portions of the adjacent side and end walls 77 and 78. The hinged strap is also diagonally creased at 86 to permit the two sections of the strap 83 to be folded towards one another until they reach a back-to-back position and abut the inner face of one wall to complete an overlock in cooperation with the underlocking member 82.

The underlocking member 82 is in the shape of a locking flap 87 which is cut out of the extension member 76 by the cuts 88 and 89 and thereby forming the outer or overlocking member 81. The locking flap 87 is integral and foldable with the adjacent walls 77 and 78 through the crease lines 84 and 85, and has the diagonal crease line 90, which is in alignment with the crease line 86 of the hinged strap 83, to form the gusset 91. The bendable locking lip or tongue 92 is formed in the upper portion of the locking flap and is foldable therefrom along the horizontal crease or fold line 93 and is engaged by the hinged strap. The interlocking of the overlocking and underlocking members together for securing the adjacent upright walls to one another is accomplished in a similar manner as previously described for the other forms of the invention.

Since certain changes may be made in the above structure and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim is:

1. A container formed from a one-piece pre-cut blank and comprising a bottom wall, upright walls integral with said bottom wall, extension members integrally connecting the adjacent upright walls to one another, characterized by the fact that each of said extension members is composed of a cut-out portion so as to complete an overlocking member that is an integral part of the adjacent upright walls and an underlocking member that is integral with one of the adjacent upright walls, the overlocking member and the underlocking member adapted to engage with one another to interlock the adjacent upright walls together, in their erected position and from the inside of the container.

2. A container as claimed in claim 1, characterized by the fact that the overlocking member is in the form of a hinged strap having its ends integral with the side edges of the adjacent upright walls and foldable inwardly of the container for interengagement with an underlocking member for completing the securement of the adjacent upright walls.

3. A container as claimed in claim 1, characterized by the fact that an underlocking member is in the shape of a locking flap which is articulated from the end of one of the adjacent upright walls and is interengaged with an overlocking member that is integral with the adjacent up-

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right walls so as to complete the securement of the aforesaid walls to one another.

4. A container as claimed in claim 3, characterized by the fact that a bendable locking lip is formed out of a predetermined outer section of each of the locking flaps and is integral therewith and is adapted to be engaged by an overlocking member for the interlocking of the extension member with the adjacent upright walls so as to complete their securement in the erected position of the aforesaid upright walls.

5. A container formed from a pre-cut blank and comprising a bottom wall, side walls and end walls articulating from said bottom wall, inside interlocking means integral with said side walls and end walls, one of said interlocking means formed of a strap having its ends integral with the adjacent upper corner portions of the adjacent side and end walls and having a folding crease line located intermediate of its ends for forming a hinge for the inward folding of said strap, and the other of said interlocking means formed of a locking flap integral with the end of one of the adjacent walls and situated below the strap, and a bendable locking lip integral with said locking flap and forming a part of a predetermined portion of its outer contour and separated from the wall to which said locking flap is integral and adapted to be engaged by the strap

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and to be interlocked therewith and with said adjacent walls so as to secure and maintain the adjacent walls together in their upright position.

6. A container as claimed in claim 5, in which, in the assembled position of the container, the two halves of the hinged strap will abut one another on the inside of the container and will be located in the space formed between the separated end of the locking lip and the face of the adjacent wall to which the locking flap forms an integral part thereof.

7. A container as claimed in claim 6, in which the locking lip is in an approximately upwardly inclined position so as to prevent lateral movement of the hinged strap when located between the end of the locking lip and its adjacent wall.

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