

Dec. 2, 1952

W. C. GEORGE
SHIPPING CONTAINER

2,620,119

Filed July 23, 1951

3 Sheets-Sheet 1

FIG. 1.

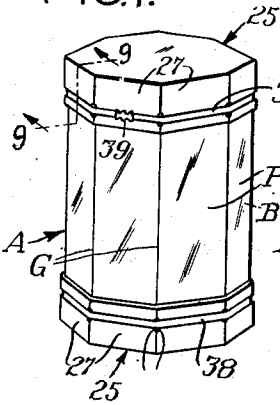


FIG. 2.

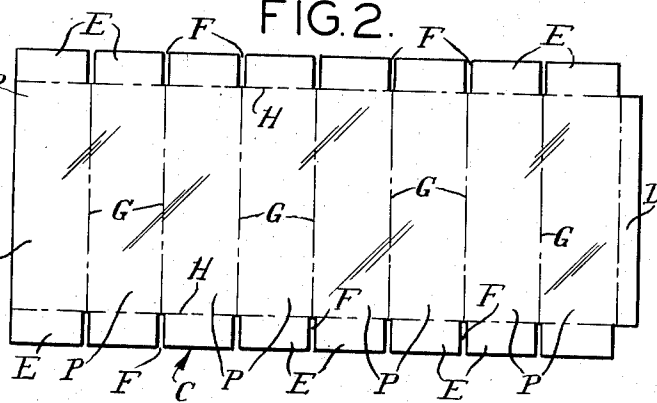


FIG. 4.

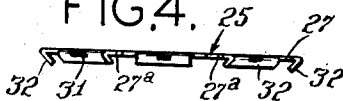


FIG. 5.

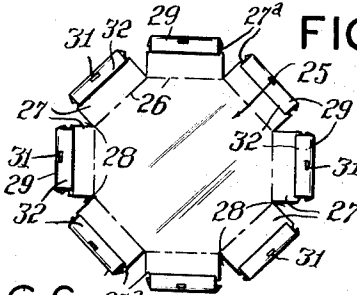


FIG. 3.

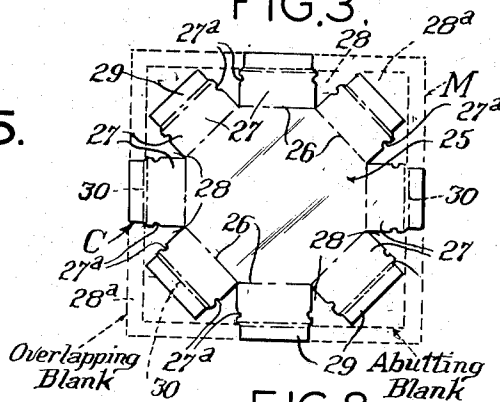


FIG. 6.

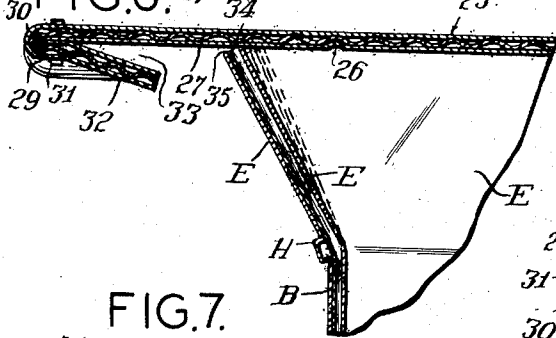


FIG. 7.

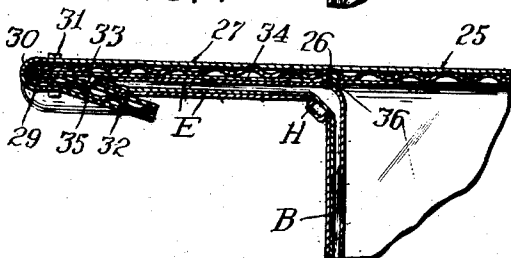
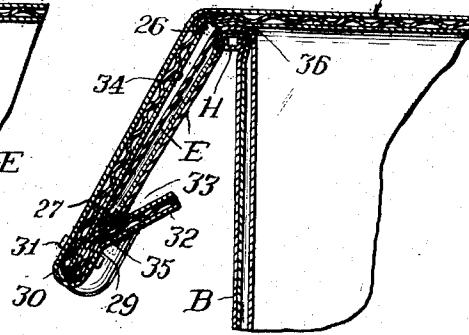


FIG. 8.



INVENTOR:
WALTER C. GEORGE,
By Carr & Carr & Gravelly,
HIS ATTORNEYS.

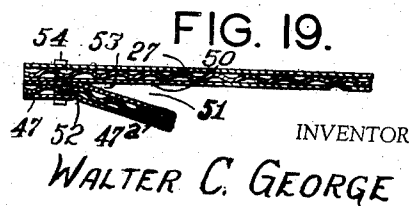
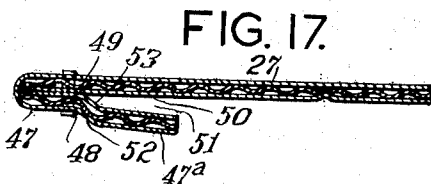
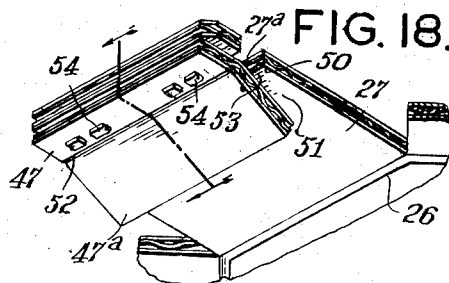
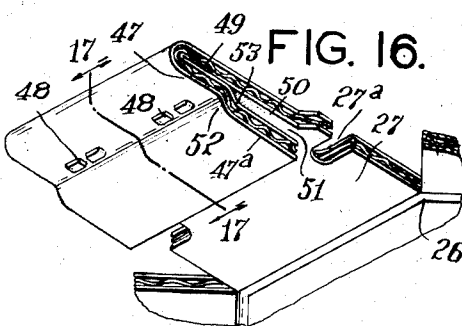
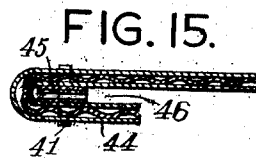
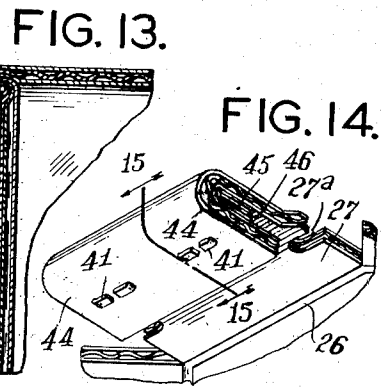
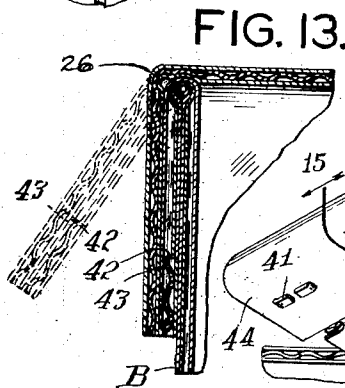
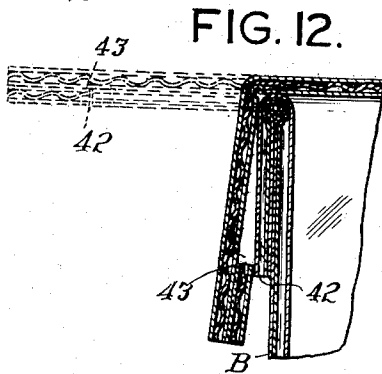
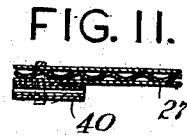
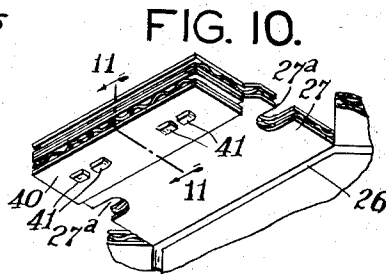
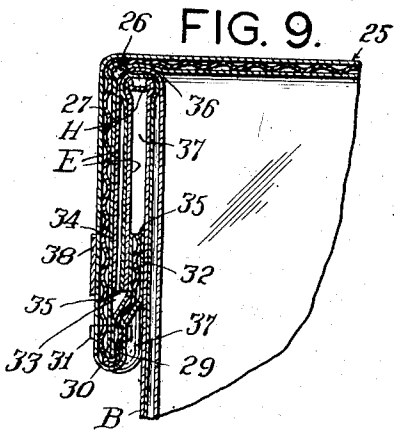
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BY

INVENTOR
WALTER C. GEORGE

Carr & Carr & Gravelly,

HIS ATTORNEYS

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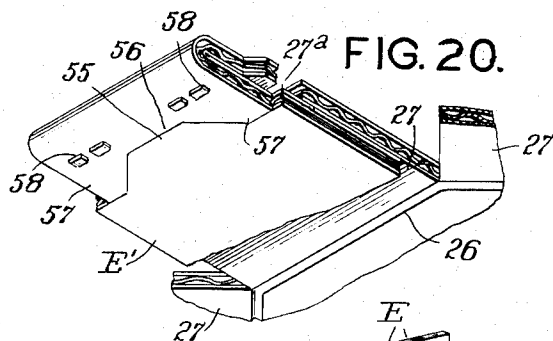


FIG. 20.

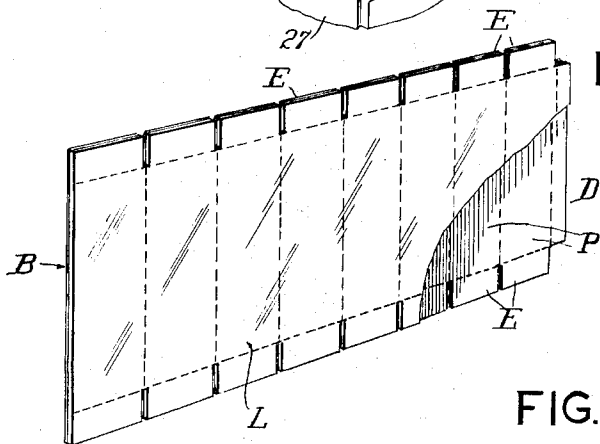


FIG. 21.

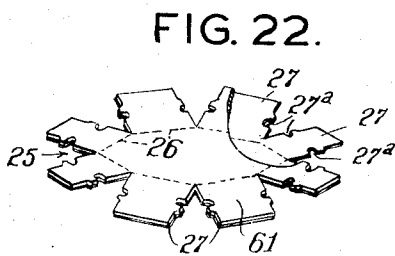
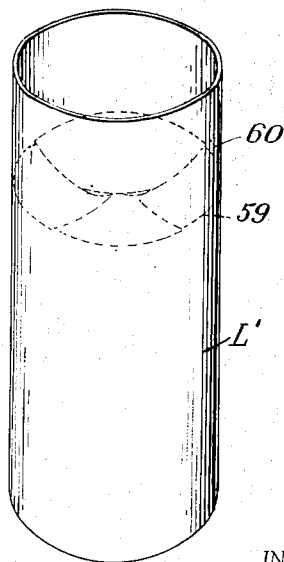


FIG. 22.

FIG. 23.



INVENTOR

WALTER C. GEORGE

BY

Carr & Carr & Gravelly,

HIS ATTORNEYS

UNITED STATES PATENT OFFICE

2,620,119

SHIPPING CONTAINER

Walter C. George, St. Louis, Mo., assignor to Gaylord Container Corporation, St. Louis, Mo., a corporation of Maryland

Application July 23, 1951, Serial No. 238,136

6 Claims. (Cl. 229-45)

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This invention relates to shipping containers embodying novel characteristics, particularly as regards the cooperation of the end structure of the container body, which end structure is preferably in the form of individual, spaced and unconnected integral flaps, and an end closure likewise preferably having individual, spaced and unconnected integral flanges of a number preferably corresponding to the number of flaps on the container end structure, in combination. When the end closure is applied to the said end structure of the container, the body flaps and the closure flanges interengage and/or interlock and, as such, results in an inner portion of the end closure being tightly and permanently sealed against a marginal edge or end portion of the container. This marginal end or edge portion of the container is defined by the fold line of the body flaps. The sealing effect is obtained due to the particular dimensions of unique stop means carried by the closure flanges, which stop means engage, or are engaged by, the outer end portion or free edge of each of the body flaps. The said stop means on the folded closure flanges and the ends of the body flaps are interengaged and/or interlocked, and when the closure is applied to one or both ends of the body of the container, there is a constant thrust or opposing force created by the interengaged and/or interlocked flaps so that the marginal end or edge portion of the container is constantly thrust outwardly when in engagement with a corresponding contacting portion of the underside of the closure while the closure is being constantly thrust inwardly when in engagement with the said marginal edge or end portion of the container, thus causing a deformation or distortion of both the marginal edge or end of the container body and the corresponding contacting underside portion of the end closure and resulting in an effective seal or sealing therebetween. The aforementioned sealing effect that is obtained is due to particular predetermined critical dimensions of the length of the body flaps relative to the stationary stop means of the closure flanges or vice versa. The length of each body flap from its fold line at the marginal end of the body to its free end is greater than the distance from each cover flange fold line to the stop means on the cover flanges.

The thrust or opposing forces that are constantly present with regard to the end closure and the marginal edge of the container body actually starts and increases as the interengaged and/or interlocked body flaps and closure flanges are moved in unison from at least a horizontal position when the container is disposed vertically to a position where the said flaps and flanges are substantially parallel with a panel or other outer side wall portion or portions of the con-

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tainer body and, in such relationship, the inward and outward thrusts or forces present between the closure and the marginal edge of the container body respectively are at their maximum to effectively produce and maintain the seal between the closure and the container as hereinbefore referred to.

In the illustrations in the drawings herewith, the container body is of polygonal outline and, to be more specific, this container body is illustrated as being octagonal as is the outline of the end closure and the end closure flanges and the body flaps preferably correspond in number with the body panels. It is to be understood, however, that the precise shape or design of the container body may vary and the overall shape of the container may be other than the polygonal design illustrated in the said drawings.

When the aforesaid body flaps and the closure flanges are interengaged and/or interlocked and positioned in substantial parallelism with the adjacent side wall portions of the container body proper, the same are held in that position by a suitable retaining means which may be in the form of a flexible steel strap or its equivalent. This retaining means, whatever it may be, may serve to interlock the body flaps and closure flanges or to maintain the proper interengaging and/or interlocking relationship of the body flaps and closure flanges or both and will prevent any accidental displacement of the closure or disassociation of the flaps and flanges from each other.

The aforesaid seal that results between the closure and the end marginal structure of the container body is sift-proof with respect to fine granular materials and in some instances liquids and semi-liquids may be placed within the container and sealed therein. The seal produced is substantially water-proof, moisture-proof and sift-proof. Of course, the container is adapted to have any sort of commodities stored therein such as articles of manufacture of all kinds, foods and the same may be divided into compartments or partitions by removable means or permanently affixed means therein and if the container be of such size as to warrant, an access opening of any desired kind may be provided in one or more of its walls so as to enable packing and unpacking of a relatively deep container without having to remove either one or both of the end closures that are permanently attached to the container body.

The present container is ideally adaptable for containing and shipment of nails of all weights therein as well as other small articles of hardware such as screws, bolts, lag bolts, and many other such articles too numerable to mention herein.

In the event that the container is adapted to

contain a rather thin liquid, it may be desirable to insert a liner within the same or this liner can be applied to and follow the complete and overall blank from which the container body proper is made and, likewise, the liner can be applied to and follow the overall design comprising the end closure or closures. The liner can be of water-proof material of any kind. One such material would be a water-proof plastic material which preferably should be somewhat flexible and/or resilient so that it will conform to the interior shape and design of the wall or walls of the container. When the liner is applied to the blank forming the container and the end closure therefor, it may be adhesively, and preferably is adhesively, secured to these blanks or, if desired, the liner may be totally free of but associated with the blank both for the body of the container and the end closure or closures.

The body portion of the container may be fabricated from double faced corrugated paperboard and which body portion, when assembled in tubular form, is rather rigid and, likewise, the end closure or closures, as the case may be, may also be fabricated from double faced corrugated paperboard possessing the same characteristics as regards strength and rigidity as the double faced paperboard from which the container body is fabricated. However, other synthetic, natural or preferably fibrous materials may be utilized to fabricate either the body of the container or the end closures such as solid fibrous paperboard possessing sufficient strength and rigidity, or board formed from synthetic resinous or plastic materials, or combinations of same, and, of course, possessing the necessary characteristics as regards strength and rigidity.

These shipping containers may, of course, be made of any height and diameter, for instance, the height of several inches up to several feet and the diameters may vary considerably.

Shipping containers of the present character and embodying the novel end closure or closures therewith must, of course, be able to withstand crushing either inwardly or outwardly of the body portion and closures thereof as well as to withstand any and all reasonable compressive or expansive forces when articles or materials of most any kind are placed therein. The present shipping containers may be subjected to rather rough handling particularly during shipment or when the same are stored one or more upon another or other heavier boxes or packages may be placed on the same or against the body walls. Then, too, the present containers are fabricated such that if packed or loaded with articles or materials and if for any reason they should be dropped accidentally or otherwise, such dropping will not result in loosening of the end closure or closures as the case may be or distorting the end closures or the container body. Where the containers are loaded and heavy, it can be assumed that they may be picked up by a grapple or other such means or by the forks of a lift truck and, under any and all of these conditions of handling, storing and shipping, the same will withstand any abuses, within reason, without any detrimental effect as regards distorting the end closures or the body of the container or loosening the end closures.

The aforesaid stop means, which is preferably similarly positioned or disposed on a portion of each of the end closure flanges, may be such that the extreme free ends of the body flaps abut the same, or the stop means may be so fabricated

that at least a portion thereof overlaps a free end portion of each of the body flaps and, in this overlapping arrangement of the stop means, the extreme end portion of the body flaps will abut an interior portion of the stop means and this interior portion acts as the said stop means. This stop means, whether it be of the abutting or overlapping type, in cooperation and combination with the body flaps, results in the formation of the aforesaid seal between the end closure and the marginal end or edge of the container that is defined by the body flaps when disposed outwardly from the body proper.

In the assembling of an end closure with an end portion of the body of the container, and assuming of course that the plurality of body flaps are properly positioned and either inter-engaged and/or interlocked with the stop means that is disposed on the underside portion of each of the end closure flanges, both the closure flanges and the body flaps, before securing of the end closure to the body, at one point or position in the assembly, extend substantially radially outwardly respectively from the end closure and the body and, in the assembling or securing of the end closure to the body, the body flaps and the closure flanges are moved in unison from their radially outwardly extending positions to a position substantially parallel with the wall of the body of the container and, during the course of a predetermined part of that movement, the aforesaid stop means, which are in engagement with the body flaps, effect the seal between the marginal end of the container body as defined by the bent over body flaps and an interior portion of the end closure, and the aforesaid retaining means, such as the strap or the like, surrounds and contacts an exterior portion of the closure flanges that are in substantial parallelism with the body of the container and maintains these flanges permanently in that position.

The assembly of an end closure with an end portion of the body of the container is substantially the same as embodied in my co-pending application, Serial No. 175,909, filed July 26, 1950, the present application being a continuation-in-part of the said copending application and, further the apparatus and method for applying the end closure to an end portion of the container body is as disclosed in an application entitled Device for Applying Closures to Containers filed concurrently herewith, Serial No. 238,181, and an application entitled Method for Forming, Assembling and Securing End Closures to Containers, filed January 7, 1952, Serial No. 265,343.

In certain prior art patents, there are disclosed end structures for container bodies provided with flaps and end closures provided with flanges. In these prior art patents, the body flaps and the closure flanges are associated with each other and the said associated flaps are disposed in substantial parallel relationship with the outer wall portion of the container body. However, in these prior art patents, the important novel feature of providing the interengaged and/or interlocking body flaps and closure flanges and creating the constant thrust or forces between the same and the stop means preferably carried by the closure flanges, which stop means is engaged by the free ends of the body flaps thereby arresting relative movement between the same to create the inward and outward constant thrust or forces between the flaps and flanges and the sealing of the end closure on the marginal edge of the container as defined by the bent over body flaps to result

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in or produce the definite continuous and uninterrupted distorted seal between an underside portion of the end closure and the said marginal edge of the body, is entirely lacking. Moreover, the prior art patentees did not recognize the following features of the present invention as being essential; the criticality of the length of the body flaps relative to the stop means which these flaps abut or vice versa, the movement in unison of the body flaps and closure flanges from an angular position above the horizontal or at least at the horizontal with respect to the vertical wall of the container to a position substantially parallel with the wall during assembly of the end closure with the container, and the continuous and uninterrupted seal that is under continuous compression between the marginal edge of the body of the container and an adjacent inner face portion of the end closure.

From the foregoing, it is clear, therefore, that the particular end closure and the stop means carried by the end closure flanges, which stop means is engaged by the free ends of the body flaps and results in the aforesaid seal between the end closure and the body of the container, is quite a radical and unique departure from the prior art patents and a distinct advance in the shipping container art.

In the drawings:

Fig. 1 is a perspective view of the shipping container embodying my invention;

Fig. 2 is a plan view of the scored blank comprising the tubular body of the container;

Fig. 3 is a plan view of the under face of the blank for one of the end closures;

Fig. 4 is a side elevational view of one of the end closures preassembled and ready for attaching to the body portion;

Fig. 5 is a plan view of the underside of the pre-assembled end closure shown in Fig. 4;

Fig. 6 is an enlarged fragmentary vertical sectional view showing the closure of Fig. 4 and its flanges in partially assembled relationship with the body flaps;

Fig. 7 is an enlarged fragmentary vertical sectional view showing the movement of the end closure and its flanges from a position shown in Fig. 6 downwardly toward the marginal edge of the container simultaneously with the downward movement of the body flaps;

Fig. 8 is a view similar to Fig. 7 but showing the closure flanges and body flaps moved from the position shown in Fig. 7 closer toward an end wall portion of the container and partially forming the seal between the marginal edge of the container and an underside portion of the end closure;

Fig. 9 is a view similar to Fig. 8, taken substantially along line 9—9 of Fig. 1, but showing simultaneously moved body flaps and closure flanges in substantial parallel relationship with an end wall portion of the container and the seal fully effected between the marginal edge portion of the container and the underside portion of the end closure;

Figs. 10, 11, 12 and 13; Figs. 14 and 15; Figs. 16 and 17 and Figs. 18 and 19 respectively show variations or modifications of the end closure flanges with stop means and Fig. 20 shows a still further modification or variation of an end closure flange with stop means and the body flap;

Fig. 21 is a perspective view of the body blank with the lining either adhesively secured thereto or merely associated therewith;

Fig. 22 is a view in perspective showing one end

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closure with the lining either adhesively secured thereto or merely associated therewith; and

Fig. 23 is a perspective view of a liner to be inserted within the container body.

The invention will be more readily understood by referring to the drawings in detail wherein the same reference numerals or characters all denote the same parts.

In the invention as depicted in Figs. 1 through 9 of the drawings, the container as a whole with the end closures applied thereto is denoted at A. The body portion B of the container is formed from a blank C which is a substantially rectangular shaped solid sheet or strip of corrugated or similar board. As shown, the container is octagonal in outline and, consequently, therefore, it includes eight connected together panels P, each of which panels are preferably similar in dimensions, both as to length and width. At one side of the blank C, there is an integral sealing flap D which is preferably coextensive in length with its adjacent end panel constituting the container body blank. Each of the panels P of the blank C at opposite ends thereof and integral therewith is provided with a similar foldable body flap E. There is a slit or slot F between each of the aforementioned flaps which allows each of the said flaps to be bent or folded as hereinafter described. Further, the blank C is vertically scored at G so as to define each of the panels P and to allow the blank to be set up in hollow octagonal form such as shown in Fig. 1. When so set up, the sealing flap D, of course, has an adhesive or stitching, metal or otherwise, which serves to secure this flap to an underside corresponding portion of the panel at the other side of the blank. When the body B of the container is set up, the flaps E at the bottom and top thereof will all extend outwardly from the body proper and all of these flaps are adapted to be bent or folded outwardly on the fold or score line H. This fold line H, when the flaps are folded or bent outwardly from the same or out of the plane of the panels P, constitutes the continuous and uninterrupted marginal sealing edge or end portion of the container body.

The end closures 25 are identical in construction and the application of the closures to the end portions of the container body and their association with the aforesaid body flaps are also identical. Therefore, a description of one of such end closures and its application to and positioning on one end of the container body will suffice.

The outline of the end closure, of course, must follow the shape of the body of the container. In other words, if the container is octagonal, then the outline of the closure must also be octagonal but this shape of both the body and the end closure or closures, as the case may be, may well be varied to other polygonal shapes and contours and might possibly be utilized in connection with a cylindrical container.

As shown in Figs. 3, 4 and 5, the end closure 25, in its state before application to the flapped end of the container, is substantially flat. The underside of the end closure 25 is continuously polygonally scored as at 26 and this scoring 26 on the underside of the closure is so dimensioned relative to the marginal edge or end of the container that, when the closure is partially applied to the flapped end of the container, the uninterrupted scored portion 26 of the underside of the closure will be disposed in substantially vertical alignment with the outer surface of the body panels for some variations of the invention but,

in other variations, the said score line is slightly outwardly beyond the outer surface of the panels as hereinafter described.

The end closure has integral therewith and extending outwardly therefrom a plurality of spaced, individual, free and unconnected similarly formed closure flanges 27 and, of course, these closure flanges preferably correspond in number with the aforesaid body flaps. The end closure or closures are stamped from a substantially square sheet or strip preferably by a single die cutting operation and, by so doing, it will be seen, therefore, that normally waste paperboard or the like occurs between the V-shaped notches 28 between the individual and free closure flanges 27 and, likewise, waste material occurs in the remainder of the blank in the opposite four corners 28a exteriorly of the end portions of the cover flanges adjacent these corners. This waste material may be utilized to form a stop or abutment means on the underside of the closure flanges, as hereinafter more fully described. The abutment means may be in the form of an extension, a preferably slightly reduced in width extension 29, integral with the closure flanges 27 as hereinafter described. To form the stop or abutment means, the extensions 29 from each of the closure flanges 27 are reversely bent or folded along the double score line 30 against a corresponding underside end portion of the closure flanges and these extensions which constitute stop or abutment means are each individually held or maintained stationary on the underside portion of each of the closure flanges preferably by means of stitching with metal staples 31 or the equivalent thereof, and it is to be noted that the staple on each flange is positioned close to the fold line 30 so as to allow the unsecured portion of the extension to spring away from the inner face portion of the flange, see Fig. 6, for a purpose later described. Thus, when each of the extensions 29 are folded as aforesaid and stitched or stapled or otherwise secured in place, the end closure will assume the condition as shown in Figs. 4, 5 and 6 of the drawings and, in that condition, the cover flanges are adapted for application to the body flaps on the end of the container body. Each of the closure flanges at its opposite side edges is cut out or notched slightly as indicated at 27a and, when these flanges are in position about the container, the notches serve as means for positioning and maintaining a retaining band therein and about the flanges as hereinafter more fully described.

In the invention as depicted in Figs. 4 through 9 inclusive, the closure flange stop or abutment means is of the overlapping type namely that the same partially overlaps an end portion of each of the body flaps and this overlapping is clearly shown in Figs. 7 through 9.

It will be noted that the stitching or the one or more staples 31, which serve to secure the folded-over stop means 29 in position with each of the end closures of the closure flanges 27, are positioned adjacent the bight or fold line 30, as hereinbefore described. This leaves a considerable portion 32 of the stop or abutment means 29 free and unattached and, with a corresponding underside portion of each closure flange, provides a recess 33 between opposed inner side portions of the stop means and the closure flanges.

The manner of applying the end closure to a flapped end portion of the container is depicted in Figs. 6 through 9 of the drawings. In starting off with the application of the end closure 25 to the flapped end of the body of the container,

and as seen in Fig. 6, this end closure is simply seated on the extreme free edges of the plurality of body flaps E and these body flaps are upwardly and outwardly inclined from each of the several panels with which they are integral and the extreme free edges of these body flaps engage corresponding underside portions of the closure flanges at the point denoted at 34. When these body flaps E are bent outwardly at substantially the inclination relative to the body panels as shown in Fig. 6, the underside of single score line H of the corrugated board will begin to crush or be deformed. When there is relative movement between the end closure 25 and the body B with its flaps E from the position of the closure and flanges as shown in Fig. 6 to the position shown in Fig. 7, it will be seen that the extreme free end portion 35 of the body flap will have positioned itself automatically within the recess 33 and, of course, will have its extreme end portion in each of the recesses 33 and in stopped or abutted relationship therein.

In the position of the end closure as shown in Fig. 7, the extreme end portion 35 of the body flaps has entered the recess 33 as far as they can be so entered and these body flaps are stopped or abutted against the stop means carried by each closure flange and, in this position of the parts it will be seen that the uninterrupted marginal edge or end of the container body has started to definitely form and a further crushing or deformation of the paperboard or the like takes place at the point H of fold or bending of the body flaps on the body proper. Further, in the position of the parts shown in Fig. 7, it will be noted that the uninterrupted score line or formation 26 on the underside of the end closure is disposed substantially directly over and in vertical alignment with the outer surface of the body panel and over the marginal edge of the container as defined by the partially bent or folded body flaps E.

To further proceed with the assembly of the end closure on the container, and from the position of the body flaps and closure flanges as seen in Fig. 7, the same have been moved simultaneously and in unison to a position as shown in Fig. 8 and, here, it will be seen that the score line or formation H, which is below the marginal edge or end of the container body, is further deformed and crushed. The uninterrupted score line or formation 26 on the underside of the end closure which rests on the said marginal edge or end portion are both partially distorted or crushed and, between these latter crushed and deformed parts, the moisture-proof, sift-proof and tamper-proof seal 36 is partially formed and the fold line 25 is disposed slightly outwardly displaced from vertical alignment with respect to the outer surface of the panel having been so displaced incident to a stretching of the paperboard due to the folding thereof, see Fig. 8. From the position of the flaps and flanges and the aforesaid marginal end portion of the container as seen in Fig. 9 where the end closure is fully and completely applied to the end of the container, the fold line or formation 26 on the underside of the closure will have moved slightly further to the left than as shown in Fig. 8; and the portion to the right thereof over the marginal edge of the container is rather completely deformed without breaking or rupturing the same and the marginal edge portion as defined by the bent-over body flaps is likewise rather completely deformed, and thus the seal 36 between the deformed portions aforementioned is effected.

It will be seen from Figs. 7 through 9, that the extreme end portion 35 of the body flaps has not moved further inwardly in the recess 33 notwithstanding the fact that it has been bent or folded in unison with the cover flanges 27 from a substantially horizontal position as shown in Fig. 7 to a substantially vertical position as shown in Fig. 9. The length of each body flap and the point of stoppage or abutment on each closure flange is such that, if each flap were individually and separately folded toward and against the side wall panels of the container, such as shown diagrammatically as in Fig. 12, there would be an overlapping of the free end portion of the body flap with a portion of the stop means on each of the closure flanges. This means, therefore, that the relative length of the body flaps and closure flanges is such that, when abutted or stopped in a substantially horizontal position as shown in Fig. 7, and when folded from the position in that figure to the position through Fig. 8 to the position shown in Fig. 9, there will be opposing forces created between the stop means and the body flaps, whether it be of the overlapping type as hereinbefore described or the abutting and aligned type as hereinafter described. Thus, when the body flaps and closure flanges are moved in unison and they are both stopped from relative movement such as shown in Fig. 7, the stop means urges the body flaps outwardly while at the same time the stopped free end portions of the body flaps urge the closure flanges inwardly, and thus opposing forces are created and are constantly exerted between the flaps and flanges during the folding movements of the flaps and flanges toward the body in unison and when all of the flaps and flanges are properly positioned, secured and locked to the body of the container. The result is the aforementioned extremely efficacious seal 36 which is effected by the deforming effect between the uninterrupted contacting marginal edge or end of the container body with the corresponding uninterrupted surface portion on the underside of the end closure.

When the closure is fully and completely applied and under constant compression, with the aforementioned opposing forces present, the flaps and flanges are in the position and condition as shown in Fig. 9 wherein it will be seen that the free portion 32 of the abutment or stop means is disposed in substantial contacting parallelism with the corresponding portion of each of the panels constituting the container body and, thus, there will be a slight space 37 above and below the free portion of the stop means 32 between the body panel and the inner surface of the body flap and a lower portion of the stop means.

A metallic or other similar band 38 or wire encircles the flaps as shown in Figs. 1 and 9 and is secured under tension by a suitable device or machine and is clamped at its ends as at 39. Spaced portions of this band or the like rest in the notches 27a that are disposed in opposite side portions of the closure flanges 27.

The invention as depicted in Figs. 10 through 13 inclusive is identical in every respect with the invention as depicted in the already hereinbefore described figures of the drawings and differs from these other said figures of the drawings in that, instead of folding over or bending the stop or abutment means 29 from the end of the closure flanges 27, this stop means is in the form of substantially rectangularly shaped flat strips 40 and

these strips are from the waste material from cutting out the end closure blank as referred to hereinbefore in connection with Fig. 3. The stop means 40 is, of course, separate and distinct from the blanks and obviates the necessity of forming the extensions 29 on the blank shown in Fig. 3, which extensions constitute the stop means or abutment. In utilizing these waste strips or parts of the blank of course considerable savings of material is attained in connection with the formation of the end closure or closures. The stop means as shown in Figs. 10 through 13 is simply applied to the underside end portion of the closure flange 27 by means of the one or more metal stitchings 41. As shown, the stop means 40 may be coextensive in width with the end portion of the closure flange or it is conceivable that it may terminate short of the end or side portions of this closure flange if such proper length of waste material from the blank may not be had.

As already described in connection with Figs. 6 through 9, inclusive, Fig. 12 illustrates for all of the variations of the invention described herein, how the overlapping of the stop means with an end portion of the body flaps occurs when the closure flange and the body flap are moved separately toward or against the panels of the body of the container. This Fig. 12 illustrates clearly the point of stoppage which is denoted at 42 where the free end of the body flap contacts or abuts the inner end or edge 43 of the stop means. In Fig. 13 the abutted or stopped free end of the body flap and the closure flange have been moved in unison toward and against the panel of the body of the container and, thus, it will be seen in this variation of the invention, the stop means and the body flap are in alignment during and after assembly. While the band is not shown applied to the exterior lower portion of the closure flanges to maintain them in position and preserve the seal that is effected between the aforesaid marginal edge or end of the container and an uninterrupted underside of the end closure, it is understood that this band or its equivalent is to be used. Moreover, in the variation of the invention as disclosed in Fig. 13, it will be noted that the space 37 shown in Fig. 9 is eliminated and that the body flaps and closure flanges and the abutment means are all in substantial parallelism with the end portion of the container.

A further variation of the invention is shown in Figs. 14 and 15. In these two figures, the abutment or stop means is formed by reversely bending an end portion 44 over an end portion of the underside of the closure flange 27 and instead of having this bent over portion contacting a portion of the underside of the closure flange, a separate abutment strip or stop 45 is inserted between the folded over extension and a corresponding part of the underside of the closure flange adjacent the right portion thereof and stitching 41 serves to hold same together. The abutment strip or stop is of less width than the turned over portion 44 as seen from Figs. 14 and 15, and thus provides a recess 46, into which recess the free end portion of the body flap is disposed and is in stopped or abutted relationship with the stop means disposed in that recess and the functioning of this type or variation of the closure flange, stop means and body flap is precisely the same as hereinbefore described.

A further variation of the invention is shown in Figs. 16 and 17 and, here, an extension 47 of the closure flange 27 is bent or folded over an

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end portion of the cover flange and stitched as at 48 into contacting relationship as at 49 with a corresponding underside end portion of the closure flange 27, and the remainder of this turned over portion 47a is spaced from a corresponding under side portion 50 of the closure flange 27 and thus provides a recess 51. This spacing is effected by an offset bent formation 52. In this modification of the invention, the free end portion of the body flap simply is inserted into the said recess 51 and is abutted and stopped therein at the point 53 which is opposite the offset portion 52. Here again, the body flaps and closure flanges and the stop means cooperate with each other and function precisely as hereinbefore described with regard to the other variations of the invention.

Still a further variation of the invention is depicted in Figs. 18 and 19 and this variation is quite similar to the invention as depicted in Figs. 16 and 17 except that the stop means 47 and 47a is a separate strip that is attached by the stitching 54 to the underside or surface of the free end portion of the closure flange 27. In this variation of the invention, the offset portion of the stop means is formed by a score line 52 and results in the recess 51 being formed between the free portion of the stop means and a corresponding undersurface portion of the closure flange and it is in this recess that the free end portion of the body flap is received and stopped and functions precisely the same as hereinbefore described.

In the variation of the invention as depicted in Fig. 20, the closure flange 27 is in a substantially horizontal plane such as depicted in Fig. 7 of the drawings and the modified type of body flap E' is abutted or stopped against the stop means on the underside of this closure flange. The free end of the body flap is provided with a tongue or centrally disposed tapered projection 55, which tongue is adapted to be received in a similarly formed cut-out notch or recess 56 in the stop means 57. This stop means 57 is formed by folding or bending over an integral extension of the free end of the closure flange 27 and, as in some of the other modifications or variations of the invention, the stop means is secured in position by means of the stitching 58. The tongue 55 of the body flap serves to guide the same into the recess 56 of the stop means when the end closure is initially positioned on the body flaps such as in Fig. 6. It will be seen that if the respective closure flanges and body flaps are not properly aligned and properly positioned relative to each other for assembly such as shown in Fig. 6 and if they are out of registry the tongue 55 will serve to register or align the closure flanges with the body flaps. In respects other than the functioning of the tongue and recess feature of Fig. 20, the function of the said flaps, flanges and stop means is precisely the same as described in connection with the other hereinbefore described forms or variations of the invention.

It has been mentioned that the interior of the flat blank such as shown in Fig. 2 may have a lining of any suitable material which may be water-proof and in some instances paraffined or otherwise treated to render same useful in connection with packing of food stuffs and chemicals therein. In packing food stuffs and chemicals, the selection of the lining should be such that there would be no detrimental reaction between the article or product, whatever it may be that

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is packed, and the lining. The lining may be of natural or synthetic material and, in some instances, it has been found that a polyethylene lining is quite satisfactory.

The lining L disclosed in Fig. 21, it will be seen, follows the complete outline surface, and shape of the body blank as shown in Fig. 2. This lining may be adhesively or otherwise permanently secured to the blank or it may be simply positioned against the walls of the blank and the body flaps. It is conceivable that, in some instances, the lining covering the body flaps would not be necessary but, in certain instances, it is quite desirable and obviously when the body flaps are turned or bent downwardly to define the marginal edge, the lining of these flaps, therefore, continuously covers this marginal edge or end portion of the container and, assuming that the inner surface of the end closure were lined, then the two linings would enter into the aforementioned seal that has been described in detail hereinbefore. If the said lining for both the end closure and the body of the container, including the marginal edge or end portion, is paraffined or otherwise capable of being slightly deformed and pressed together, then the seal that is formed is indeed quite effective.

Another form of liner is depicted in Fig. 23 and, as such, it is cylindrical as indicated at L' and one end thereof may, of course, be closed prior to inserting within the hollow body of the container. This liner may be polyethylene material adapted to sealingly hold liquids or semi-liquids or very fine powdered material. In Fig. 23 the dotted line indication 59 simply indicates that the top portion 60 of the liner has been folded downwardly to assume the position shown at 59 and thus close the end of the liner within the container body. While the liner shown in Fig. 23 is cylindrical, it obviously can be of polygonal formation and closely follow the interior contour of the container body and this liner is capable of being inserted in and removed from the container body.

In Fig. 22, there is a liner 61 which follows the complete outline and surface of the die cut end closure 25 including the flanges 27 and, like the liner in Fig. 21, it, too, can be adhesively or otherwise permanently secured to the undersurface of the end closure including the extensions which form the stop means and where the stop means is a separate strip, to also cover or line that stop means on each of the closure flanges.

In referring to the interengagement and/or interlocking of the body flaps and closure flanges, it will be seen that, in the invention as depicted in Figs. 7 through 9; Figs. 14 and 15; Figs. 16 and 17 and Figs. 18 and 19, there is a definite interlocking between the closure flanges and body flaps by means of the stop means. In other words, in these mentioned figures of the drawings, the free ends of the body flaps are positioned within a recess that is between the inner portion of the stop means and a corresponding inner portion of the closure flanges and when so positioned, the free ends of the closure flanges are definitely interlocked. The aforesaid flaps and flanges are particularly and permanently interlocked when they are disposed adjacent the end wall portions of the container body and the band, strap or the like 30 is applied.

Strictly speaking, with regard to the other variations of the invention as shown in Figs. 10 through 13 and in Fig. 20, there is a definite

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interengagement here and, as a matter of fact, there is a definite interengagement of the body flaps and closure flanges in the other figures of the drawings. When the variations of the invention as in Figs. 10 through 13 and Fig. 20 are employed, and the band or the like 33 is applied, then these flaps and flanges are also interlocked. So, in the several variations of the invention, there is not only an interengagement of the body flaps and closure flanges but an interlocking of all these flaps and flanges as well.

Referring back to Fig. 3 of the drawings, it will be noted that the abutting or aligned body flaps and closure flange type blank, so labeled in this figure of the drawings, results in considerable saving of material due to the fact that the same is smaller than the overlapping type blank so labeled in Fig. 3. Also, in the abutting type blank, Fig. 3, there is a savings of waste material from which the stop means 47a, Figs. 18 and 19, are made. The said waste material that is saved is that indicated at 28 which is the V formation between the closure flanges; and the material 28a at all four corners of the blank and this material is utilized to form the separate and attached stop means hereinbefore referred to. In this same figure of the drawing, where the stop means is formed by the folded over extensions 29, it will be seen that more material in the blank is necessary but, here again, in forming the blank of this overlapping type as so labeled in Fig. 3, the material between the flaps and all four corners can also be utilized to form stops for the abutting type of stop means hereinbefore referred to.

As regards the octagonal score line 26 on the underside of the closure 25, Fig. 3, the distance between any two opposed portions thereof as defined by the base (the connection of the said flanges with the closure at the score line) of the closure flanges is substantially equal to the distance between the outer surface of any two respective opposed assembled body panels. This feature of the invention contributes substantially to the effective seal and closing of the container.

I claim:

1. A shipping container comprising connected together panels forming a polygonal body, each panel having a separate and unconnected integral flap extending from the folded marginal end thereof and having free ends, and an end closure including a cover panel and separate unconnected integral folded flanges, each flange having a similar stop means on the inner face thereof, the body flaps having their free ends in immovable abutting and stopped relationship with the stop means and serving to interlock the cover with the end of the body and to provide a continuing com-

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pressed seal between distorted contacting adjacent portions thereof, the stop means being stationary on the inner side of each cover flange adjacent the free ends thereof, the length of each body flap from its fold line at the marginal end of the body to its free end being greater than the distance from each cover flange fold line to the stop means whereby when the same are in substantial parallelism with the panels constant opposing inner and outer forces are present between the body flaps and cover flanges respectively, the compressed seal being between a distorted contacting marginal edge of the body and an uninterrupted adjacent underside portion of the cover, the said seal being maintained permanently and continuously by the constant opposing forces between the body flaps and cover flanges, and means to maintain the flaps and flanges in substantial parallelism with the body panels.

2. A shipping container as defined in and by claim 1 wherein the stop means consists of a separate strip permanently secured to an underside end portion of each closure flange.

3. A shipping container as defined in and by claim 1 wherein the stop means consists of a reversely folded extension of each cover flange permanently affixed on the inner end portion thereof.

4. A shipping container as defined in and by claim 3, wherein a portion of the reversely folded extension is spaced from an adjacent inner end portion of the cover flanges and overlaps an end portion of each body flap.

5. A shipping container as defined in and by claim 3, wherein each stop means is notched inwardly of its free end, and the extreme end portion of each body flap is shaped to conform with the notches and is disposed therein.

6. A shipping container as defined in and by claim 1 wherein a liner is provided for the inner surface of the closure and extends over the fold line of the flanges thereon, and a liner for the body that extends over the marginal edge thereof onto the body flaps.

WALTER C. GEORGE.

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