March 1, 1932. E. L. SHEPARD ET AL 1,848,066

MOLDED PULP ARTICLE

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Fig. 1

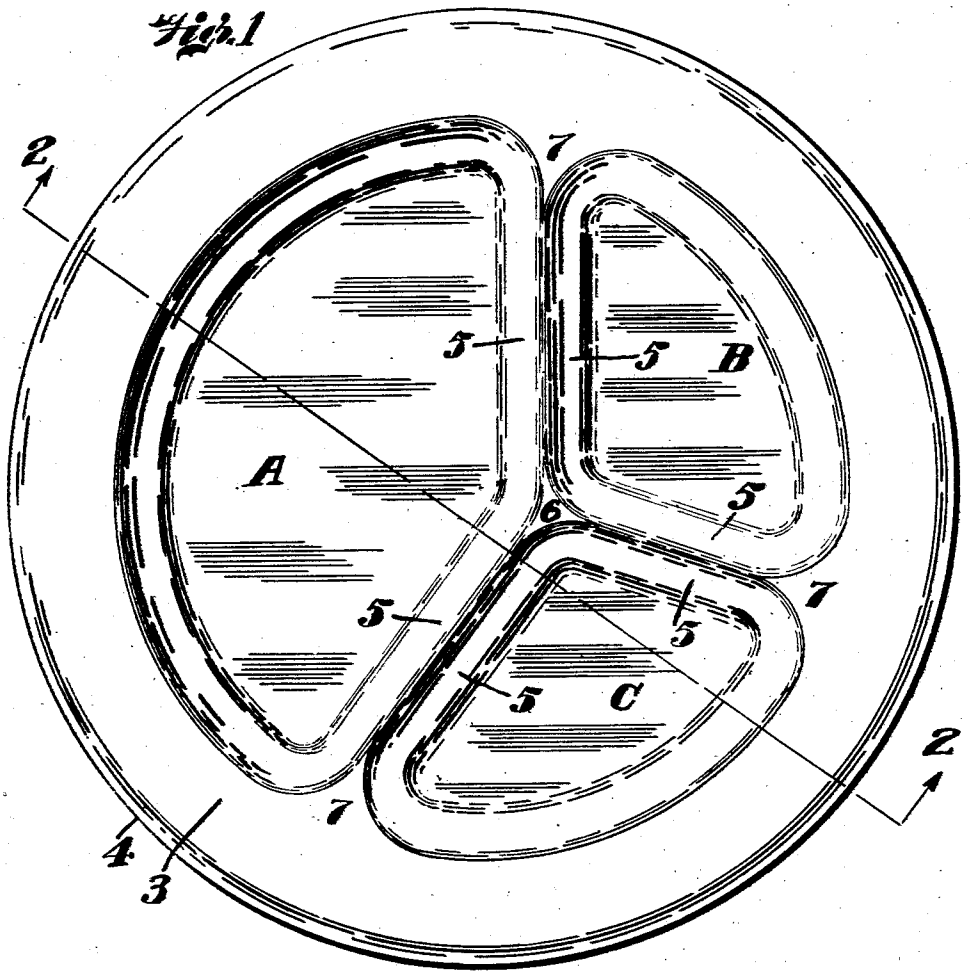


Fig. 2

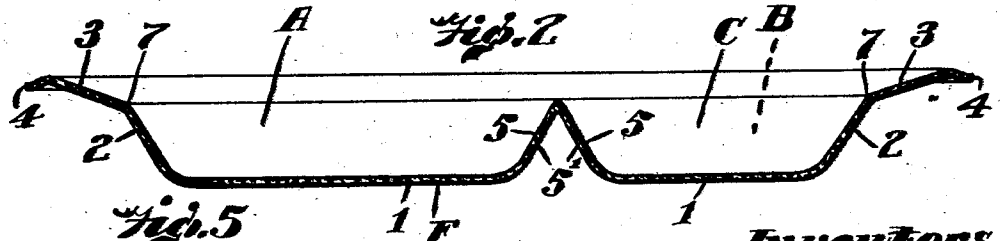
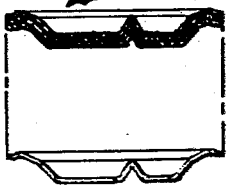


Fig. 5



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Fig. 3

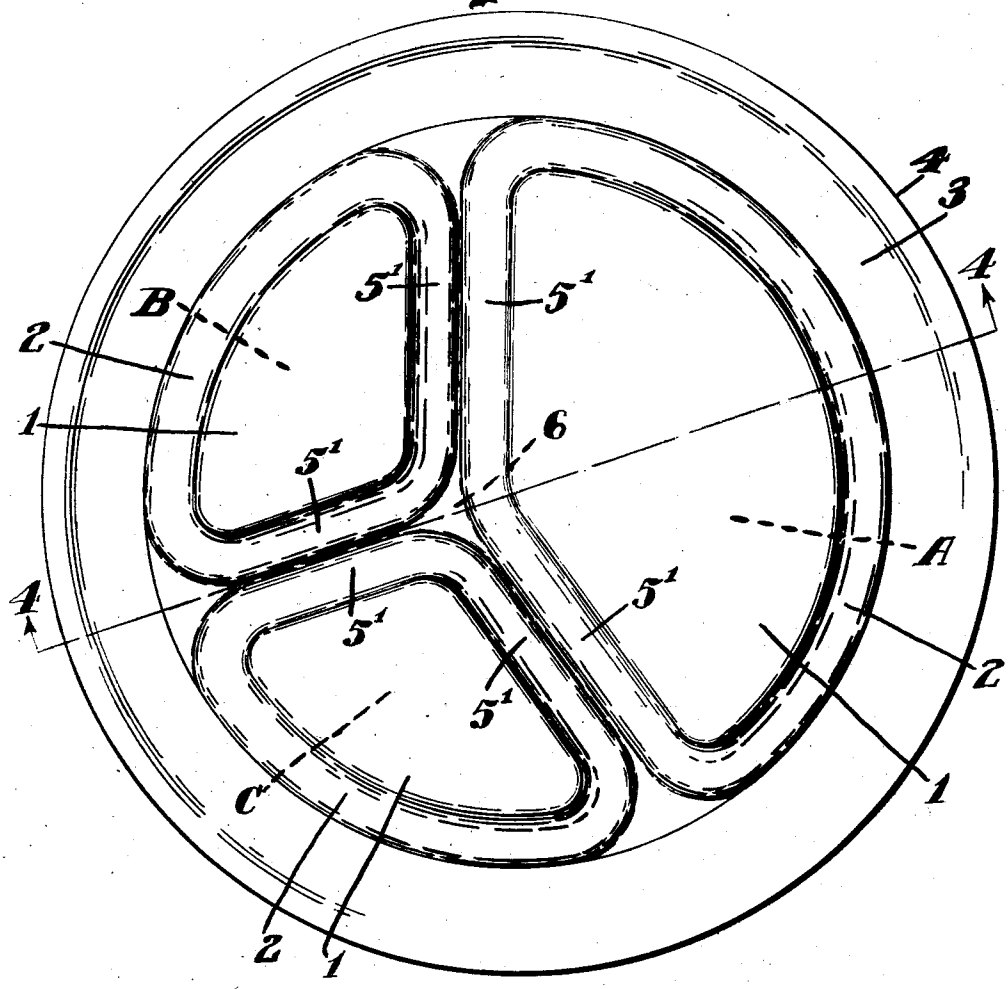


Fig. 4

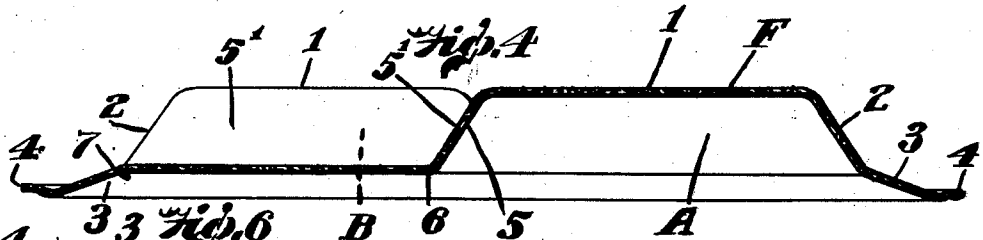
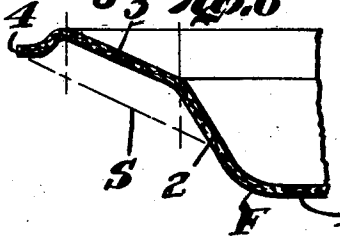


Fig. 6



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MOLDED PULP ARTICLE

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Fig. 7

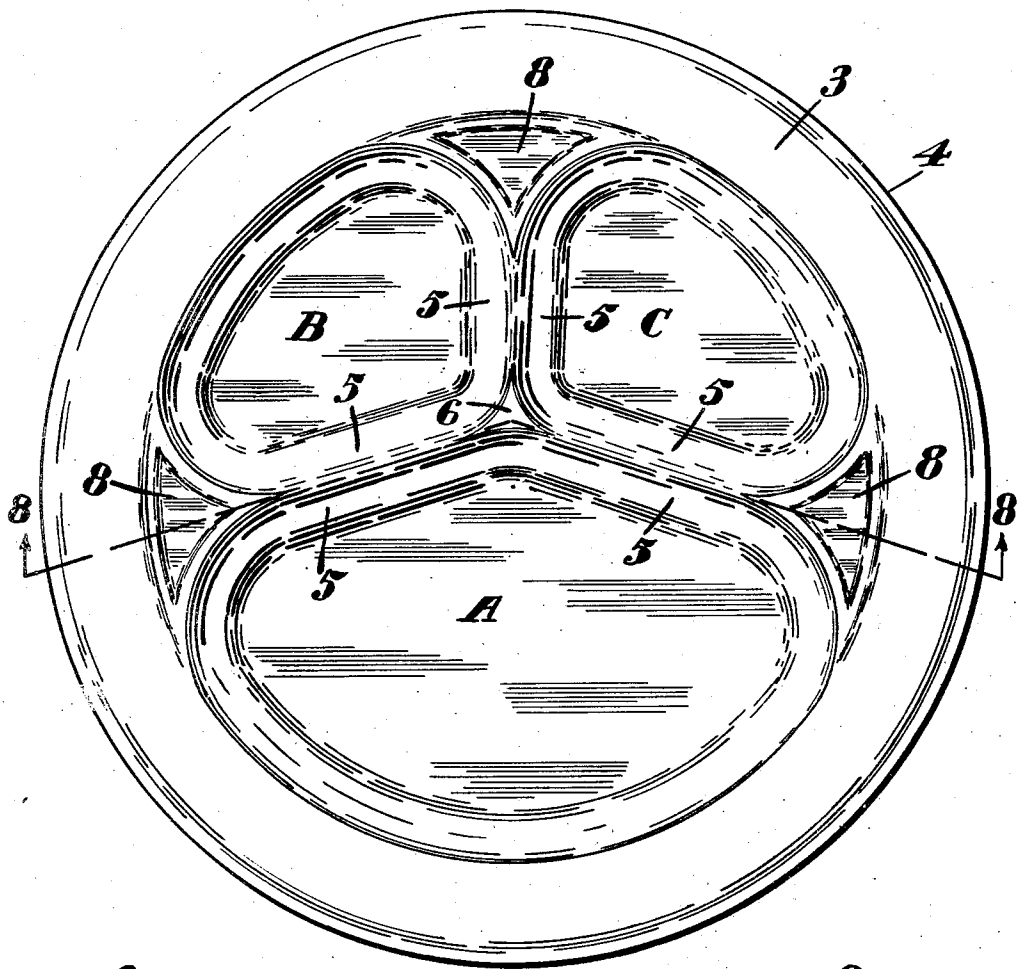
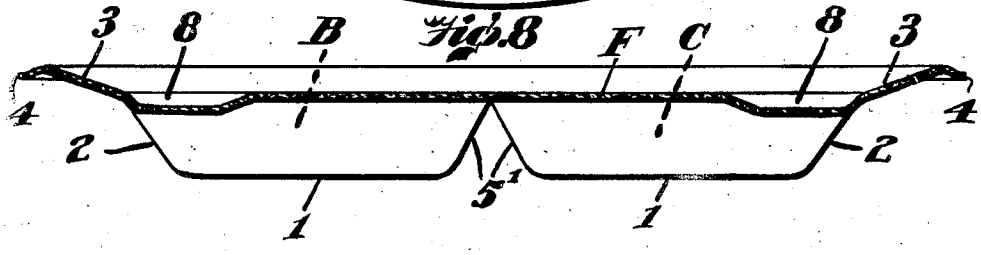


Fig. 8



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Patented Mar. 1, 1932 1,848,066

UNITED STATES PATENT OFFICE

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MOLDED PULP ARTICLE

Application filed July 12, 1929. Serial No. 377,849.

Of the many different kinds of plates, dishes and trays in use at present, some of them are divided into one or more compartments or divisions in order that different kinds of food can be definitely separated within the container, dish, tray, or plate. These have been made of china or other similar ware in a manner similar to the ordinary plates and dishes used for table service.

In order to eliminate the cleaning and washing of these dishes or trays, they are sometimes lined with paper or other similar material which fits in a general way over the partitions or receptacles in the plate or dish, and which liner can be thrown away after use.

Attempts have been made to produce and use divided containers by pressing them from a sheet of paper or board, wrinkling or corrugating those sections where superfluous stock was present. These wrinkles or corrugations have, of course, little strength and any plate or dish so formed is not able to support the amount of food or other material which would be placed in it. This led to the development of supporting trays or dishes within which the paper plates or dishes could be fitted.

Aside from their lack of strength, however, these partitioned or divided containers from a sheet of board or paper were unsatisfactory in another respect in that it was impossible to make the dividing sections of any great depth or height owing to the difficulty of disposing of the folded stock from the flat sheet without tearing or otherwise making the final article unusable, and consequently the partitioned or divided container of paper or board never met with favor in the trade.

Various containers or trays of metal having partitions or other separating sections have been devised for food service. With the metal tray, however, the metal may be stretched during the formation of the partitions which keeps the structure intact, whereas if paper or pressed board is used the formation of the partitions results in either a tear or fold depending upon the direction in which the material is stretched.

In order to overcome the objections mentioned hereinabove, we have devised our present invention. According to it we provide a partitioned plate, dish, tray, or other container which is molded from wet laid pulp. Such a partitioned container is not only capable of supporting food or other material which may be placed in it without danger of breaking or bending, but also provides food compartments or spaces of sufficient depth and partitions separating these compartments of sufficient height so that a sufficient amount of food or other material can be placed in the compartments without danger of commingling with any other articles of food placed in adjacent compartments.

Our partitioned plate, dish, tray or other container is moreover molded in one piece and without excessive thickness so that no surplus stock has to be folded over or otherwise disposed of, making a weak place in the article, the partitions being molded as an integral part of the plate or dish structure and not only being of sufficient height properly to maintain the different articles of food separated, but also forming a structurally rigid and strong container.

Our partitioned plate, dish, tray, or other container therefore is characterized by a height and strength of partition never attained in the old style pressed or stamped paper plate, where the partitions were but little more than surface wrinkles contributing nothing to the stiffness of the plate or the adequate separation of the various articles of food. The partitions of our plate are of appreciable height and define distinct and separated food compartments within which the various articles of food are maintained separated under all conditions or use of the plate. Moreover, they cooperate with each other and with the plate rim in such a way as to secure that stiffness and rigidity so essential in a plate of this character. Our partitions act as horizontal trusses which stiffen and strengthen the plate in several directions so that even when fully loaded, the plate may be grasped at its rim and lifted without danger of buckling upon itself and spilling its contents.

In our partitioned plate, dish, tray, or other

container, the rim is not only strengthened and stiffened by the integral partitions, but the rim itself is formed with a reinforced edge and with a channel section which makes for increased strength and rigidity. Such rim is higher than the partitions which brace and strengthen it, but its angularity is less than the angularity of the wall of the food compartments. The dividing partitions are of inverted V-shape so as to enable the articles to nest upon each other, thus following general practice as regards the packaging and shipment of molded pulp articles.

It is obvious, of course, that while the drawings illustrate a round plate or dish divided into three compartments, that these can be made of any shape and divided into any number of compartments. For instance, the article might be square or rectangular, divided into two, four or more equal or unequal compartments by partitions. It also might be in the form of a tray divided into any number of equal or unequal spaces of any depth which might be necessary for the purpose. The drawings therefore are to be regarded as illustrative rather than limiting. In them:

Fig. 1 is a top plan view of a partitioned plate in accordance with our invention.

Fig. 2 is a section on the line 2—2, of Fig. 1.

Fig. 3 is a bottom plan view of the plate shown in Fig. 1.

Fig. 4 is a section on the line 4—4, of Fig. 3.

Fig. 5 is a view illustrating the nestability of such plates.

Fig. 6 is an enlarged fragmentary view particularly showing the channel section formation of the plate rim.

Fig. 7 is a top plan view showing a modification wherein the spaces at the juncture of the dividing partitions with the rim are depressed sufficiently to afford compartments for the reception of butter, salt, pepper, salad dressing, or the like, which might be served as concomitants to the articles of food contained in the main food compartments, and

Fig. 8 is a section on the line 8—8, of Fig. 7.

Our plate, dish, tray, or other container is preferably die molded from any suitable pulp solution, or solutions, by methods and on machines which have now become standard in the art. As such it is composed of one or more deposits of wet laid fibre indicated generally at F which may be grease and waterproofed if desired in any suitable manner. When formed, pressed and dried, it is a one piece article of molded pulp presenting a bottom 1, a side wall 2, a rim 3 and an edge 4. The bottom 1 is transversely sub-divided by one or more partitions or ribs 5 which are molded up therefrom as separating divisions, preferably of inverted V-shape. These ribs define with each other and with the enclosing side wall 2 a plurality of definite and distinct compartments for the reception of various articles of food, which compartments are separated from each other on the obverse face of the container by the raised ribs 5 and on the reverse face of such container by the channels 5^1 formed by such ribs.

The shape of the plate, dish, tray or other container, and the number and arrangement of the dividing partitions may be varied as desired, but in the forms selected herein as illustrative of the principles of our invention, we have shown a round plate or dish embodied into three distinct and separate compartments A, B and C, the compartment A occupying approximately 144° of the circle at one side of the transverse median line of the plate, and the compartments B and C occupying approximately 108° each at the opposite side of such median line. These dimensions, of course, are arbitrary as are the number and arrangement of compartments, but are representative of a compartment arrangement which has been found satisfactory for the purposes intended.

In the forms illustrated herein the division ribs or partitions 5 merge into each other as indicated at 6 and into the side wall 2 of the plate or other article at a plurality of spaced points about the circumference thereof as indicated at 7. Such ribs or partitions are of appreciable height, being in fact preferably of the same height as the enclosing side wall 2, and as such define with said wall and with each other compartments of sufficient depth adequately to receive and maintain separated the various articles of food placed in said compartments. These partitions, therefore, are in no sense mere surface wrinkles, as in the pressed paper liners of the prior art, but on the contrary are definite dividing members which space and maintain spaced the various articles of food in the different compartments under any and all normal conditions of use of the plate.

In addition to their function as separating partitions sub-dividing the plate or other article into one or more individual food service compartments, such ribs also constitute trusses which strengthen and stiffen the plate or other article against buckling or bending when loaded with food and grasped and lifted by its rim.

In this connection, it will be noted that the partitions 5 are not only integral with the article bottom but with the article rim itself, thus providing the maximum stiffness and rigidity. It will also be noted that the partitions 5 and enclosing side wall 2 are disposed at approximately the same angle to the bottom and that such angle is a relatively steep one, being in fact about 60°, while the rim 3, although itself higher than the wall 2 and partitions 5 is disposed at a lesser angle to the bottom, being in fact about 26½°. This results in a construction combining

maximum depth of compartment consistent with requisite strength of rim. This will be apparent from the diagram of Fig. 6 wherein the so-called "channel" section formation in the rim is graphically illustrated.

Referring to this figure it will be seen that the area of the rim included between the indicated lines of perpendicular intercept and identified by the reference character S is in effect a structural section of channel form and that the rim edge 4 is a reinforced edge being bent slightly downwardly in masking relation to the under face of the plate. This results in a strength of rim not possible where the rim simply extends as a flat encircling border, and in combination with the trussing and bracing effect of the stiffening partitions 5 enables the plate when loaded to be grasped and lifted by its rim without liability of buckling or collapse.

Such a rim moreover, in combination with the inverted V-shape of the partitions peculiarly adapts the plates for nesting. This is shown in Fig. 5, wherein a stack of our nested plates ready for packaging is illustrated. In connection with this nesting feature, it will be noted that our plates may be nested closely within each other without requiring the formation on the plates themselves of some kind of a centering boss on which the bottom of the next above article in the stack may rest.

In the modification of our invention shown in Figs. 7 and 8, the ribs 5 at their juncture with the rim 3 are slightly depressed as indicated at 8 to serve as compartments for the reception of such concomitants as butter, salt, pepper, salad dressing, etc.

These compartments 8 are of less depth than the main compartments A, B and C, and are disposed between such main compartments, being in fact simply shallow depressions formed in the upper faces of the partitions 5 at their juncture with the run 3, such partitions at these points being enlarged somewhat so that the compartments 8 will be of adequate area for the purposes intended.

It will thus be noted that we provide a serviceable partitioned plate, dish, tray, or other container which can be made from wet pulp by usual dis-molding methods and without costly changes in material or thickness due to the addition of some new strengthening material in the pulp or some impractical thickness in the article itself. Such partitioned articles can be molded, dried, stacked, and packaged in the same manner and on the same machines now generally used in the production of the usual molded pulp plates and dishes.

Our partitioned plate, dish, tray or other container is not only of substantially uniform thickness, but such thickness is no greater than that of the ordinary molded pulp plate or dish. By reason of its partition and rim formations, however, and the combinative relation of these formations to each other, our container possesses a strength and rigidity not present in an unpartitioned plate or dish, and as such offers an article of real utility and superiority.

The compartments A, B and C are relatively deep compartments. By this we mean that they are of sufficient depth to maintain separated from each other under all usual conditions of service the various articles of food placed therein. As such they are to be distinguished from the food spaced of the pressed paper dish where the subdividing ribs or partitions were mere surface wrinkles of about ¼ inch in height and hence of no real effect in maintaining separated the various articles of food placed in such spaces.

Our compartments A, B and C are considerably deeper than such spaces of the pressed paper dish, being in fact about three times as deep, thus affording a depth of compartment sufficient to prevent improper commingling of the various articles of food in the use of the plate.

Various modifications in the design and construction of our invention may obviously be resorted to and all without departing from the spirit of our invention if within the appended claims.

What we therefore claim and desire to secure by Letters Patent is:

1. A food container of fibrous material, consisting of a deposit of pulp of substantially uniform thickness shaped to provide a bottom portion, a rim enclosing the same, and a plurality of integral hollow ribs extending upwardly a substantial distance from said bottom portion and merging into said rim at their outer ends, said ribs defining with said bottom and rim and with each other a plurality of food compartments and acting as strengthening and stiffening elements for the container.

2. A food container of fibrous material, consisting of a deposit of pulp of substantially uniform thickness shaped to provide a bottom portion, a rim enclosing the same, and a plurality of integral hollow ribs extending upwardly a substantial distance from said bottom portion and merging into said rim at their outer ends, said ribs defining with said bottom and rim and with each other a plurality of food compartments and acting as strengthening and stiffening elements for the container, and said ribs providing on the reverse face of the container open channels permissive of nesting with another container for storage purposes.

3. A container of fibrous material, consisting of a deposit of pulp of substantially uniform thickness shaped to provide bottom portions, side wall portions extending upwardly from said bottom portions and a rim enclosing said side wall portions, and a plurality of integral hollow ribs extending

upwardly from said bottom portions and merging into said side walls at their outer ends and of substantially the same height as said side walls, said ribs defining with said bottom portions and side walls and with each other a plurality of compartments, and acting as strengthening and stiffening elements for the container.

4. A blue plate of fibrous material, consisting of a deposit of pulp of substantially uniform thickness shaped to provide bottom portions, side wall portions extending upwardly from said bottom portions and a rim enclosing said side wall portions, and a plurality of integral hollow ribs extending upwardly from said bottom portions and merging into said side walls at their outer ends and of substantially the same height as said side walls, said ribs defining with said bottom portions and side walls and with each other a plurality of compartments, and acting as strengthening and stiffening elements for the container, said side wall portions and rim being of different angularity as to each other.

In testimony whereof we affix our signatures.

ERNEST L. SHEPARD.
JOHN G. HASKELL.