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APPLICATION FOR LETTERS PATENT

**FLAVOR GRADIENT CONTAINER AND
PACKAGED LIQUID-BASED FOOD ITEM**

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FIELD OF THE INVENTION

The present invention relates generally to containers and packaging for food items. More specifically, the invention relates to containers and packages for liquid based food items that separate ingredients of the food item.

BACKGROUND

Traditionally, soup and other related liquid-based food items are either home made or processed and packaged by commercial preparers of such products. Home made soups may provide the most natural and appealing taste, particularly since they can include selected ingredients and seasonings to suit individual preferences. Preparing home made soups, however, can require a substantial amount of time. For example, particulates, such as vegetables and meat items, must be prepared, which may involve washing and cutting vegetables and meats. The vegetable and meat ingredients are added to water or a broth, which can include seasonings and flavorings, such as salt, pepper, sugar, garlic and onion, etc. These seasonings can also be added to water. The ingredients are then heated and served. Packaged, processed, ready-to-eat soups have become very popular since they are convenient and can be quickly and easily prepared compared to home made soups. A typical can of processed soup includes a mixture of various ingredients, including a broth or a liquid stock, particulates such as meats and vegetables in different combinations, and seasonings, including salt. In use, a consumer opens the can, empties the contents of the can into a pan or bowl, and heats the soup over a range or in a microwave oven.

The manner of making processed soups is well known. Typically, they are made by metering a predetermined quantity of an ingredient or mixture of selected ingredients, which are combined and mixed in a can. A lid is placed on the can and the lid and the can are sealed together. The sealed can is sterilized and pressurized and prepared for storage or distribution. Sterilization involves exposing the can of soup to temperatures from about 240°F to about 265°F for about 12-60 minutes depending on the container size, soup thickness and rate of agitation. Sterilization issues are of particular concern with the meat and vegetable ingredients within the mixture because they may contain pathogens, which must be rendered commercially sterile for shelf stability or pasteurized in the case of refrigerated distribution. The heat source must be applied for a sufficient amount of time so

that the thermal center of the food in the container achieves commercial sterility or pasteurization.

Processed soups typically have relatively large quantities of salt (sodium chloride), which is the main source of sodium in foods. Large quantities of salt are typically used to provide a sufficient flavor impact to a consumer. Sodium is carried in the broth, and over time, the sodium diffuses or migrates from the broth into particulates, such as meats and vegetables. This "sodium diffusion" typically occurs during processing or distribution of the prepared soups (e.g., sterilization, pressurization, freezing, refrigeration, storage and distribution). Thus, a commercial preparer of soups must add enough salt to the can to compensate for sodium diffusion so that a desired flavor impact is achieved. Although a package soup delivers an adequate salt content, it contains salt levels that are typically higher than those considered healthy for consumers.

Home made soups and other liquid-based food items, such as stews, on the other hand, typically do not use these high quantities of salt since the salt is mostly concentrated in the surrounding broth. Thus, home made soups and stews taste fresher and healthier and have lower salt contents compared to processed food items, while still providing desirable flavor impact.

High sodium contents may cause various health problems, particularly considering United States Department of Agriculture (USDA) recommendations and that it is generally accepted that high sodium diets can contribute to health problems, such as high blood pressure. For example, a single can of certain processed "Chunky" brand soups available from Campbell Soup Company has about 1,800 mg of sodium, or 900 mg per serving. The USDA recommends that the amount of salt consumed on a daily basis not exceed 2,400 mg. Thus, a single can of processed, ready-to-eat soup almost meets the recommended daily allowance of sodium.

Attempts have been made to reduce sodium content by reducing the quantity of salt that is added to a can of soup. While the objective is on the right track, the taste of the resulting processed soup may not be satisfactory since the reduced amount of salt is absorbed by the particulates and does not provide sufficient salt flavor.

Processed soups and other liquid-based food items, therefore, can be improved. Soups can be made to deliver a more natural, home-cooked taste by providing a naturally occurring flavor gradient so that sodium does not diffuse into particulates. In other words, it

is desirable that salt remains in the surrounding broth and is added to the particulates when the soup is prepared. The amount of salt and sodium that is added to processed foods should also be reduced to provide a healthier food item, while not sacrificing taste. Reducing the amount of sodium in processed soups can contribute to healthier diets.

Further, processed soups can be prepared and processed more efficiently. Known sterilization steps must apply heat to a can of soup for a sufficient amount of time to ensure mass average sterilization and/or thermal center sterilization or pasteurization of the soup mixture, particularly the meat and vegetable particulates. The time required for the middle sections of the soup mixture to be heated can be reduced while still achieving the desired sterilization, thereby maximizing nutrient retention, color, flavor and other quality attributes, while processing soup products in a more efficient manner.

Accordingly, there exists a need for improved and healthier processed soup products and other liquid based food items that have reduced salt and sodium contents, have acceptable flavor impact, and that can be processed more efficiently than known processed soup products and liquid-based food items.

SUMMARY

According to one embodiment of the invention, a segmented container for a liquid-based food item includes an outer member, an inner dividing member, and a sealing member. The outer member includes a bottom, one or more sides extending upwardly from the bottom, and inner and outer surfaces. The inner dividing member is positioned inside the outer member. The inner dividing member includes inner and outer surfaces. The inner surface of the inner dividing member at least partially defines an inner cavity. The outer surface of the inner dividing member and the inner surface of the outer member define an outer cavity. A sealing member extends across the tops of the inner dividing member and the outer member to close the container. One or more seasonings and a liquid are placed in the inner cavity, and particulates are placed in the outer cavity. As a result, seasoning is separated from the particulates to prevent the seasoning from diffusing into the particulates. The liquid, the seasoning, and the particulates are pourable from their respective inner and outer cavities in a single motion.

In accordance with another embodiment, a segmented container for a liquid-based food item includes a substantially rigid, cylindrical outer member, a substantially rigid,

cylindrical inner dividing member, and a substantially rigid, circular sealing member. The outer member has a bottom, one or more sides extending upwardly from the bottom and an inner surface. The inner dividing member is positioned inside the cylindrical outer member and has inner and outer surfaces. The inner surface of the inner dividing member at least partially defines an inner cavity, and the outer surface of the inner dividing member and the inner surface of the outer member define an outer cavity. The sealing member extends across the tops of the cylindrical inner dividing member and the cylindrical outer member to close the container. An underside of the sealing member includes a cushion that sealingly engages a top edge or surface of the inner dividing member and closes the container when the sealing member is placed over the tops of the outer and inner dividing members. A liquid and a seasoning are placed in the inner cavity and particulates are placed in the outer cavity so that the seasoning is separated from the particulates in order to prevent the seasoning from diffusing into the particulates. The circular sealing member is removed to open the container, and the liquid, the seasoning, and the particulates are pourable from their respective cavities in a single motion.

In accordance with a further alternative embodiment, a packaged liquid-based food item includes a container, a liquid, one or more seasonings, a plurality of particulates and a sealing member. The container has an outer member and a vertical dividing member. The outer member has a bottom, one or more sides extending upwardly from the bottom, and an inner surface. The vertical dividing member has inner and outer surfaces and is positioned inside the outer member. The inner surface of the inner dividing member at least partially defines an inner cavity, and the outer surface of the inner dividing member and the inner surface of the outer member define an outer annular cavity. Liquid and one or more seasonings are in the inner cavity, and particulates are in the outer cavity, thereby separating the seasoning from the particulates so that the seasoning does not diffuse into the particulates. The sealing member extends across tops of the outer member and the vertical dividing member to close the container. The sealing member is removed to open the container, and the liquid seasoning, and particulates are pourable from their respective cavities in a single motion.

According to another embodiment, a packaged liquid-based food item includes a substantially rigid cylindrical outer member, a substantially rigid cylindrical dividing member, a liquid, one or more seasonings, particulates and a substantially rigid circular

sealing member. The outer member has a bottom, one or more sides extending upwardly from the bottom to a top of the cylindrical outer member, and an inner surface. The dividing member has inner and outer surfaces and is positioned inside the cylindrical outer member and at least partially defines a cylindrical inner cavity. The outer surface of the cylindrical inner dividing member and the inner surface of the cylindrical outer member define an annular outer cavity. The liquid and the seasoning are placed in the cylindrical inner cavity, and the particulates are placed in the annular outer cavity. As a result, the seasoning is separated from the particulates to prevent the seasoning from diffusing into the particulates. A substantially rigid circular sealing member extends across the tops of the cylindrical inner dividing member and the cylindrical outer member to close the container. When the circular sealing member is removed to open the container, the liquid, the seasoning, and the particulates are pourable from their respective cavities in a single motion.

In various embodiments, the inner and outer members can be cylindrical and to define cylindrical inner and annular outer cavities. Alternatively, the inner and outer members can be other shapes that define cavities of other shapes. The inner surface of the inner dividing member can exclusively define the inner cavity or define the inner cavity with an inner surface of the outer member. The outer and inner members can be concentric or offset from a center point.

The inner member can extend between the top and the bottom of the outer member and can also extend from a side of the outer member and completely or partially between the top and the bottom of the outer member. The inner and outer members can be various materials and can be substantially rigid, such as metal or plastic. They may also be substantially transparent.

The sealing member can be a lid that is placed across the tops of the outer and inner members. The outer and inner members can be approximately the same height. The sealing member can also be a substantially ridged metal or plastic. An underside of the sealing member can include a cushion, which sealingly engages a top edge or surface of the inner dividing member. The cushion can have the same shape as the top edge or surface of the inner dividing member or have a shape and size to sufficiently cover the top edge or surface. For example, the cushion can be annular or have a ring-like shape.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring now to the drawings, in which like reference numbers represent corresponding parts throughout, and in which:

Figure 1 is top view of a segmented container for a liquid-based food item according to one embodiment;

Figure 2 is a side view of the container shown in Figure 1;

Figure 3 is an illustrative cross-sectional view of a liquid based food item having the container shown in Figures 1 and 2, illustrating separation of particulates and seasonings according to one embodiment;

Figure 4 is bottom view of a lid having a sealing member or cushion according to one embodiment;

Figure 5 is a cross-sectional view of the container shown in Figures 1 and 2 showing how sterilization is improved by separating particulates within a container according to one embodiment;

Figure 6 further illustrates heat transfer characteristics of package embodiments shown in Figure 5;

Figure 7 is top view of a container for a liquid-based food item according to another embodiment that includes an offset inner dividing member;

Figure 8 is a side view of the container shown in Figure 7;

Figure 9 is bottom view of a lid according to one embodiment that can be used with the container shown in Figure 7;

Figure 10 is top view of a container for a liquid-based food item according to a further embodiment that includes an inner dividing member that extends between inner surfaces of an outer member;

Figure 11 is a side view of the container shown in Figure 10;

Figure 12 is bottom view of a lid according to one embodiment for use with the container shown in Figure 10;

Figure 13 is top view of a container for a liquid-based food item according to another alternative embodiment that includes a square- or rectangular-shaped inner dividing member;

Figure 14 is a side view of the container shown in Figure 13;

Figure 15 is bottom view of a lid according to one embodiment for use with the container shown in Figure 13;

Figure 16 is top view of a container for a liquid-based food item according to yet a further alternative embodiment that includes an inner dividing member that is connected to an inner surface of an outer member;

Figure 17 is a side view of the container shown in Figure 16;

Figure 18 is bottom view of a lid according to one embodiment for use with the container shown in Figure 16;

Figure 19 is top view of a container for a liquid-based food item according to another alternative embodiment that includes an inner dividing member that is connected to an inner surface of an outer member and that extends partially between the top and bottom of the outer member;

Figure 20 is a side view of the container shown in Figure 19;

Figure 21 is bottom view of a lid according to one embodiment for use with the container shown in Figure 19;

Figure 22 is top view of a square- or rectangular-shaped container for a liquid-based food item according to another embodiment that includes an inner dividing member;

Figure 23 is a side view of the container shown in Figure 22;

Figure 24 is bottom view of a lid according to one embodiment for use with the container shown in Figure 22;

Figure 25 is a front view of a flexible segmented pouch for a liquid-based food item according to one embodiment having a “pouch within a pouch” in which the widths of the inner and outer members are the same;

Figure 26 is a side view of the flexible segmented pouch shown in Figure 26;

Figure 27 is a bottom view of the flexible segmented pouch shown in Figure 26;

Figure 28 is a front view of a flexible segmented pouch for a liquid-based food item according to one embodiment having a “pouch within a pouch” in which the width of the inner member is less than the width of the outer member;

Figure 29 is a side view of the flexible segmented pouch shown in Figure 28;

Figure 30 is a bottom view of the flexible segmented pouch shown in Figure 28;

Figure 31 illustrates a flexible segmented pouch having an inner pouch that is narrower than the outer pouch;

Figure 32 illustrates a flexible segmented pouch having an inner pouch that is centrally disposed within an outer pouch and that includes lateral support members extending between outer sides of the inner pouch and the inner sides of the outer pouch;

Figure 33 illustrates an alternative embodiment of a segmented pouch having an inner pouch that is centrally disposed within an outer pouch without lateral support members;

Figure 34 illustrates an alternative embodiment of a segmented pouch having an inner pouch that is disposed within and along a side of an outer pouch; and

Figure 35 is a flow chart illustrating preparation of a packaged liquid-based food item according to one embodiment.

DETAILED DESCRIPTION OF ILLUSTRATED EMBODIMENTS

Embodiments of segmented or flavor gradient package of container, a packaged liquid-based food item, and a method of manufacturing a packaged liquid-based food item are described. With various embodiments, soups and other liquid-based food items (generally “soup”) can be prepared so that flavorings and seasonings, such as salt, pepper, sugar, onion powder or flavoring, garlic powder or flavoring, and any necessary colorings (hereafter referred to as “seasonings”) in a broth do not diffuse or migrate into particulates, such as meats and vegetables. Rather, the broth and the seasonings are stored in one segment, and particulates and water (as necessary) are stored in another segment. In some applications, a portion of the seasonings (and colorants if necessary) can be added to the particulate containing segment to provide an improved flavor impact. In use, the package or container is tilted and the broth and seasonings are poured out with the particulates and water from the respective cavities in a single pouring motion. As a result, the soup product is more similar to home made soups since the seasoning is added just prior to cooking, thus providing a more natural tasting product compared to typical processed soups in which the salt and sodium diffuses into the particulates. Since salt is not fully absorbed by particulates, a similar salt or flavor impact can be provided with reduced amounts of salt, thereby providing a soup with more natural taste and a healthier soup with reduced sodium contents compared to known processed soup products.

Referring to Figures 1-2, one embodiment of a container or package 100 suitable for a liquid-based food item, such as a soup and a stew, includes an outer member 110 and an inner dividing member 120. The outer and inner members 110 and 120 may have various shapes.

In the illustrated embodiment, the outer and inner members 110 and 120 are cylindrical, however, other shapes can be utilized.

The outer member 110 includes an inner surface 111 and an outer surface 112, which is typically handled by a consumer, a bottom surface 113 and a top edge or surface 114. The inner dividing member 120 is disposed or positioned inside of the outer member 110 and includes an inner surface 121, an outer surface 122, a top edge or surface 123 and a bottom edge or surface 124. In the illustrated embodiment the inner surface 121 of the inner member 120 defines a vertical, inner cavity 125, e.g., a circular or cylindrical cavity. An outer cavity 115 is defined between the outer surface 122 of the inner member 120 and the inner surface 111 of the outer member 110. In the illustrated embodiment, the outer and inner members 110 and 120 are cylindrical and concentric, or share a common axis or center point. Thus, the corresponding outer cavity 115 is annular or ring-like, and the inner cavity 125 is cylindrical.

The outer and inner members 110 and 120 may be formed using various techniques and food-grade materials. For example, the inner and outer members 110 and 120 can be substantially rigid and made of a substantially rigid metal or plastic, e.g., aluminum and other materials that are used to make soup cans and packages. The outer and inner members 110 and 120 can be formed together as a unitary piece or, alternatively, connected together using, for example, adhesive or welding, depending on the materials that are selected. As a further alternative, the inner and outer members 110 and 120 can be plastic and made using, for example, injection molding. Thus, in these embodiments, the outer and inner cavities 115 and 125 have pre-defined shapes. Further, the inner member 120 can be hollow so that the bottom of the hollow inner member 120 is sealed against the bottom 113 of the outer member 110, or the inner member 120 can have its own bottom surface. Persons skilled in the art will appreciate that various segmented configurations can be made with various techniques and materials.

Referring to Figure 3, the inner cavity 125 is filled with a liquid or broth 300 containing seasonings 302. The outer cavity 115 is filled with particulate ingredients 310. Water 311 or other liquids can be added to the outer cavity 115, as necessary, so that the particulates 310 can be poured out of the package 100 with the water. Exemplary particulates include meat particulates, such as chicken, beef, turkey and meat substitutes, and vegetable particulates, such as celery, carrots, corn, peas, beans and potatoes. Particulates 310 may also

include noodles and rice. Thus, the seasonings 302, including salt, are separated from particulates 310 that would otherwise absorb the seasonings 302 if they were not separated.

Referring to Figures 3-5, a sealing member 320, such as a lid or cover as illustrated, is placed on top of the package, i.e., over top edges or surfaces 114 and 124 of the outer and inner members 110 and 120, to close the package 100. The inner cavity 125 extends between radius $r=0$ and radius r_1 . The outer cavity 115 extends between radius r_1 and radius r_2 .

In the embodiment shown in Figure 3, the sealing member 320 includes a body or plate 322 and a sealing member or cushion 324. The cushion 324 can be, for example, Teflon[®], rubber or another food-grade material. The sealing cushion 324 is shaped and positioned so that it overlays the top edge or surface 124 of the inner member 120 to ensure that the contents of the inner cavity 125 do not leak into the outer cavity 115 holding the particulates. Thus, the cushion 324 is preferably larger than radius r_1 . The cushion can be shaped appropriately to mate with the top edge or surface 124.

For example, as shown in Figure 1 and 2, the top surface 124 of the inner member 120 has a circular shape and is placed in the middle of the space defined by the outer member 110. The sealing cushion 324, as shown in Fig 4 can be correspondingly shaped and sized to cover the top circular section of the inner member 120 when the lid 320 is placed over the inner and outer members 110 and 120 to seal or close the package 100. This can be accomplished with a circularly shaped cushion 324, as illustrated. However, the sealing cushion 324 may or may not have a similar shape as the top edge or surface 124 of the inner member 120 since a sealing cushion 324 having various shapes and sizes can adequately cover and seal the top of the inner member 120. For example, the cushion 324 may be a solid piece that occupies most of the bottom surface 322 of the sealing member, or as a ring, as shown in Figure 3. Accordingly, sealing cushions 324 having various shapes and sizes can be used to cover and seal top edges or surfaces 124 of various shapes and sizes.

The sealing member 320 is placed on top of the container after the inner cavity 125 is filled with broth 300 and seasonings 302 and the outer cavity 115 is filled with particulates 310 and water or other liquids 311. Thus, all or the majority of the salt and other seasonings 320 remain contained in the inner cavity 125, advantageously separated from the particulates 310 in the outer cavity 115. This separation is maintained from the beginning of production, during storage, distribution, sales, and subsequent consumer storage, thereby maintaining a flavor gradient to prevent "sodium diffusion" or other flavorings into the particulates.

Referring to Figure 5, separating particulates 310 and broth and seasoning components 302 provides the additional benefit of more efficient sterilization. In the illustrated embodiment, the particulates 310 are retained and concentrated in the outer cavity 115 and against the inner surface 111 of the outer member 110. As a result, heat 500 is more easily applied to the particulates 310 since they are concentrated in a particular area in the package and removed from the thermal geometrical center of the container, rather than being diffused and mixed together throughout the package as in conventional processed soups. Thus, embodiments provide for faster heat transfer and faster sterilization compared to traditional soup mixtures since the particulates 310 are separated from the faster heating thermolabile broth or fluid center 300 with salt, sugar and other seasonings 302. In other words, the fluid center is more readily sterilized by heat 500. Further, while heat is being applied to the particulates in the outer cavity 115, the particulates 310 are also heated by conductive heating from the convective heated fluid center. One can selectively control the heat transfer within the segmented container by selectively “insulating” the concentric material 120, 121 and 122 illustrated in Fig 1

As a result of the segmented configuration, shorter heating durations can be used to achieve the same sterilization results while optimizing flavor, color and nutrient retention. In contrast, traditional soups having mixtures of ingredients require longer heating durations since the particulates are mixed together with the broth and are not heated as easily, since thermal processes have to be assumed at the thermal center of the container which is typically along the axis of the container where heating lags are notable when compared to the outer layers of the container. Thus, the traditional soup or food containers require longer heating durations. Further, food items according to various embodiments are subjected to less heat 500. This reduced thermal stress, results in a higher quality food item that is not otherwise subjected to unnecessary heating and flavor and texture degradation.

The benefit of faster sterilization times and reduced thermal stress on the food item is further illustrated in Figure 6. As shown in Figure 6, the heat transfer 500 to the center or to a particular width of a concentric ring can be determined as follows:

$$\text{Liquid or particulate: } T = j_{r1} * (T_1 - T_0) * 10^{(-t/fh)}$$

This equation represents the heat transfer in the water, broth or puree after the curvilinear heating (Hayakawa, 1980) has been transposed. In some foods there are “broken” heating curves that require to solve the equation through specific mathematical algorithms for varying values of f_h . Numerical solutions can also be applied to solve heat transfer within containers. The governing differential equations vary and follow simple energy balances as shown in the following one dimensional equation

$$k \cdot p \cdot c_p \cdot dT / dt = a \cdot d^2t/dr^2$$

for $0 < x < r_1$ in axi-symmetric heating

Boundary conditions have to be defined according to heating medium characteristics

where T = Temperature of food

j = heating lag factor in the liquid or solid particles

r = dimensional location within the container

T_1 = Heating medium temperature

T_0 = Initial food temperature

f = empirically measured heating rates

h = heat transfer coefficient

k = thermal conductivity of food

p (ρ) = food density

C_p = food specific heat

This equation represents a simplified heat transfer system and one versed in the science of heat transfer would conclude that multiple complex conditions of heat transfer would apply. The solutions currently applied in the industry typically require numerical solutions to complex partial differential equations. Exemplary numerical methods include finite differences and finite elements.

Various other package designs can be utilized to provide a flavor gradient in liquid-based food items and/or provide more efficient sterilization by separating out particulates from thermolabile broth having seasonings.

In one alternative embodiment, referring to Figures 7-9, the vertical inner dividing member 120 can be offset relative to the outer member 110 so that the inner and outer members 120 and 110 do not share a common center point or axis, as do the embodiments shown in Figure 1-6.

In another alternative embodiment, referring to Figures 10-12, the vertical inner dividing member 110 may be connected to the inner surface 111 of the outer member 110. In this embodiment, the inner cavity 125 is defined by a combination of the inner surface 111 of the outer member 110, and an inner surface 121 of the inner member 120.

A further alternative embodiment is shown in Figures 13-15. In the illustrated embodiment, the inner dividing member 110 can have a square or rectangular shape, and the outer member 120 can have a cylindrical shape. The sealing cushion 324 can also have a corresponding square or rectangle shape, or be large enough to cover the square-shaped inner member 110. The inner member 110 can have other shapes besides cylindrical, square and rectangle shapes, as necessary.

Figures 16-18 illustrate yet a further alternative embodiment. The inner dividing member 120 can be side-mounted to an inner surface 111 of the outer member 110 using side mounting component 1600. As shown in the Figures, in this embodiment, the inner member 120 extends between the top 114 and the bottom 113 of the outer member 110. It may or may not be necessary to secure the bottom of the inner dividing member 120 to a bottom of the outer member 110. Alternatively, as shown in Figures 19-21, a similar side-mounting configuration can be used, and the inner member 120 can extend from the top 114 and partially down into the outer member 110. In other words, the bottom 123 of the inner member 120 may be suspended above the bottom 113 of the outer member 110. A smaller inner cavity 125 area may be useful if, for example, a higher concentration broth or brine is utilized, and less volume is needed to contain the broth. The particulates 310 and water 311 can also flow around the bottom of the suspended inner member 120 shown in Figures 19-21.

Further alternative embodiments are shown in Figures 22-24. In this embodiment, the outer member 110 and package design can be square or rectangular rather than cylindrical. Further, the shape of the inner dividing member 120 can be cylindrical (as illustrated) or square, such as shown in Figures 13-15.

Figures 25-27 illustrate an additional alternative embodiment of a segmented container or package that provides a flavor gradient. The package is a flexible pouch 2500 and, more particularly, a "pouch within a pouch" that includes an outer member or pouch 2510 and an inner dividing member or pouch 2520. The outer member 2510 includes two panels 2511 and 2512, and the inner member 2520 includes two panels 2521 and 2522. The

outer member 2510 and the inner member 2520 are flexible, e.g., flexible plastic. The plastic can be transparent, translucent or colored.

A seal 2530 extends across the tops 2514 and 2524 of the outer and inner members 2510 and 2520. The seal 2530 can be, for example, heat seal. The sides of the outer and inner members 2510 and 2520 can be similarly sealed. A tear strip 2532 can be provided across a top portion of the package to allow a consumer to tear open the top of the sealed package and access the contents in the outer and inner pockets or cavities 2515 and 2525 and allow the contents to be poured out of the package in a single pouring motion.

The outer member 2510 includes an inner surface and an outer surface. The inner member 2520 includes an inner surface and an outer surface. The inner surface of the inner member 2520 at least partially defines an inner pocket or cavity 2525 for holding seasonings. An outer pocket or cavity 2515 is defined between the outer surface of the inner member 2520 and the inner surface of the outer member 2510. The outer pocket 2515 includes particulates, such as meat and vegetable particulates, and water, as necessary. The pouch 2500 shown in Figures 25-27 is shown having liquid for purposes of illustration, but the outer and inner cavities 2515 and 2525 can be filled with various ingredients as appropriate. In the illustrated embodiment, the inner member 2520 is shorter than the outer member 2510 so that the outer member 2510 and the outer cavity 2515 substantially envelope the inner member 2520, i.e., the side and bottom portions of the inner member 2520.

The flexible segmented pouch 2500 provides a flavor gradient by separating the salt and other seasonings from particulates, and allowing a consumer to empty the pouch contents in a single motion. The embodiment of a segmented pouch also decreases sterilization times since particulates are concentrated in one area or pocket and can be readily heated through a plastic material. Further, the outer and inner members are flexible, thus allowing the package to assume different shapes. The packages are also durable since they are made of plastic or other durable flexible materials.

In the embodiment shown in Figures 25-27, the pouch 2500 includes a gusseted bottom 2540 that is formed by bottom portions of the outer member 2510 being folded upwardly at 2542. The bottom of the pouch 2500 is flexible and flares outwardly, thereby forming a base or bottom 2540 upon which the pouch can stand. As shown in Figure 25, the outer cavity 2515 can extend into an area defined by the gusseted bottom 2540. In alternative embodiments, the bottom can be non-gusseted.

Figures 28-30 illustrate an alternative embodiment of a flexible segmented package or pouch 2800. The embodiment shown in Figures 28-30 is similar to the embodiment shown in Figures 25-27 in that the pouch 2800 includes flexible outer and inner members 2810 and 2820 that form outer and inner cavities 2815 and 2825 and a gusseted bottom 2840 to form a base upon which the package 2800 can stand. The tops 2814 and 2824 are sealed. A tear strip, although not shown, can also be used to allow the tops of the pouch to be easily opened.

The package 2800 shown in Figures 28-30 includes an inner member or pouch 2810 having a width that is less than the width of the outer member or pouch 2820. In the illustrated embodiment, the inner member 2820 is disposed or positioned centrally within the outer member 2810. The width of the narrower inner member 2820 can vary as needed. The outer cavity 2825 can extend into an area defined by the gusseted bottom 2840. In alternative embodiments, the bottom of the package can be non-gusseted.

Figure 31 illustrates a further alternative embodiment of a pouch 3100 that is similar to the embodiment shown in Figures 28-30, but includes a different bottom or base 3140. In the illustrated embodiment, the base 3140 extends outwardly from the front of the package to allow the package to stand upright.

Figure 32 illustrates an alternative embodiment of a segmented pouch that is similar to the pouch shown in Figure 28 and further illustrates lateral support members 3200 that extend between the sides of the inner member or pouch 2820 to the sides of the outer member or pouch 2810. Thus, when the tops of the outer and inner members 2810 and 2820 are broken or torn, the inner member 2820 is laterally supported by members 3200, and the contents can be poured from their respective outer and inner cavities 2815 and 2825. Alternatively, as shown in Figure 33, the sides and the bottom of the inner member 2820 may be unattached to the outer member 2810.

Referring to Figure 34, in a further alternative embodiments, the inner member or pouch 2820 and inner cavity 2825 can be displaced from the central portion of the outer member or pouch 2810. In the illustrated embodiment, the inner member 2820 is disposed along one side of the outer member 2810. This configuration may be beneficial when, for example, the pouch is tilted to one side to pour the contents from the respective cavities 2815 and 2825.

Figure 35 illustrates a method of making a packaged liquid-based food item can be summarized as follows, although additional details have been previously discussed. In step

3500 a segmented package having an outer member and an inner dividing member is provided. In step 3510 the inner cavity is filled with a liquid and seasonings. In step 3520, the other cavity is filled with particulates and any necessary water or broth. The inner and outer cavities may be filled simultaneously or at different times depending on the configuration of the equipment. As a result, the broth and seasonings are separated from the particulates so that the seasonings do not diffuse into the particulates. The package is then sealed by placing a sealing member across over the inner and outer members in step 3530.

The tops of the outer and inner members can be different heights so that the tops can be engaged more easily by a filling machine. Additionally, a vacuum can be used to engage the outer faces of the outer member and to make the inner and outer cavities more accessible. A filling machine can a rotary machine that includes multiple heads, or multiple stage filling process can be used.

The embodiments shown and described are not intended to be limiting, but are provided for purposes of explanation and illustration. Various segmented package configurations, shapes, sizes and designs can be used to provide a flavor gradient. For example, the containers can have a size suitable for both individual consumption and for commercial or large scale use. Further, square-or rectangular-shaped outer members can be paired with inner members having cylindrical, square, rectangular or other shapes. Similarly, cylindrical-shaped outer members can be paired with inner members having cylindrical, square, rectangular or other shapes. Further, the inner members can be concentric or offset relative to the outer member, stand-alone or connected to the inner surface of the outer member. The inner members can extend between the top and bottom of an outer member or a portion thereof. The package can also be designed so that the package is easy to hold, e.g., the outer member can be contoured to fit a person's hand. Thus, persons skilled in the art will appreciate that various segmented designs that provide flavor gradients can be utilized depending on, for example, food item ingredients, concentrations and packaging considerations.

WHAT IS CLAIMED

1. A segmented container for a liquid-based food item, comprising:
an outer member having a bottom, one or more sides extending upwardly from the bottom, and inner and outer surfaces;
an inner dividing member that is positioned inside the outer member and having inner and outer surfaces, wherein the inner surface of the inner dividing member at least partially defines an inner cavity, and the outer surface of the inner dividing member and the inner surface of the outer member define an outer cavity; and
a sealing member that extends across tops of the inner dividing member and the outer member to close the container,
whereby a seasoning and a liquid can be placed in the inner cavity and particulates can be placed in the outer cavity, thereby separating the seasoning and the particulates and preventing the seasoning from diffusing into the particulates, and when the sealing member is removed to open the container, the liquid, the seasoning, and the particulates are pourable from their respective inner and outer cavities in a single motion.
2. The container of claim 1, wherein the outer member is cylindrical.
3. The container of claim 1, wherein the inner dividing member is cylindrical.
4. The container of claim 1, wherein the inner surface of the inner dividing member exclusively defines the inner cavity.
5. The container of claim 1, wherein the outer member and the inner dividing member are concentric and share a common axis.
6. The container of claim 1, wherein the outer member and the inner dividing member are offset relative to each other and have different center points.
7. The container of claim 1, wherein the inner surface of the inner dividing member defines a cylindrical inner cavity.

8. The container of claim 1, wherein the outer surface of the inner dividing member and the inner surface of the outer member together define an annular or ring-like cavity.
9. The container of claim 1, wherein the inner dividing member extends between the top and the bottom of the outer member.
10. The container of claim 1, wherein the inner dividing member extends from a side of the outer member and vertically between the top and the bottom of the outer member.
11. The container of claim 10, wherein the inner dividing member extends from a side of the outer member and from the top and partially to the bottom of the outer member.
12. The container of claim 1, wherein the outer member, the inner dividing member and the sealing member are substantially ridged.
13. The container of claim 12, wherein the outer member, the inner dividing member and the sealing member are metal or plastic.
14. The container of claim 1, wherein the outer member and the inner dividing member are substantially transparent.
15. The container of claim 1, wherein the outer member and the inner dividing member are approximately the same height.
16. The container of claim 1, wherein the sealing member comprises a lid that is placed across the tops of the outer member and the inner dividing member to seal the container.
17. The container of claim 1, wherein an underside of the sealing member includes a cushion that sealingly engages a top edge or surface of the inner dividing member.
18. The container of claim 17, wherein the cushion has substantially the same shape as a top edge or surface of the inner dividing member.

19. The container of claim 17, wherein the cushion has an annular or ring-like shape.
20. The container of claim 1, wherein the sealing member is substantially ridged.
21. The container of claim 20, wherein the sealing member is metal or plastic.
22. A segmented container for a liquid-based food item, comprising:
 - a substantially rigid, cylindrical outer member having a bottom, one or more sides extending upwardly from the bottom and an inner surface;
 - a substantially rigid, cylindrical inner dividing member that is positioned inside the cylindrical outer member and having inner and outer surfaces, wherein the inner surface of the cylindrical inner dividing member at least partially defines an inner cavity, and the outer surface of the cylindrical inner dividing member and the inner surface of the cylindrical outer member define an outer cavity; and
 - a substantially rigid, circular sealing member that extends across the tops of the cylindrical inner dividing member and the cylindrical outer member to close the container, wherein an underside of the circular sealing member includes a cushion that sealingly engages a top edge or surface of the cylindrical inner dividing member and closes the container when the sealing member is placed over the tops of the cylindrical outer member and the cylindrical inner dividing member,whereby a liquid and a seasoning are placed in the inner cavity and particulates are placed in the outer cavity so that the seasoning is separated from the particulates in order to prevent the seasoning from diffusing into the particulates, and when the circular sealing member is removed to open the container, the liquid, the seasoning, and the particulates are pourable from their respective cavities in a single motion.
23. The container of claim 22, wherein the inner surface of the cylindrical inner dividing member exclusively defines the inner cavity.
24. The container of claim 22, wherein the cylindrical outer member and the cylindrical inner dividing member are concentric and share a common axis.

25. The container of claim 22, wherein the cylindrical outer member and the cylindrical inner dividing member are offset relative to each other and have different center points.
26. The container of claim 22, wherein the inner surface of the cylindrical inner dividing member exclusively defines a cylindrical inner cavity.
27. The container of claim 22, wherein the cylindrical inner dividing member extends between the top and the bottom of the cylindrical outer member.
28. The container of claim 22, wherein the cylindrical inner dividing member extends from a side of the outer member and vertically between the top and the bottom of the outer member.
29. The container of claim 22, wherein the cylindrical inner dividing member extends from a side of the outer member and from the top and partially to the bottom of the outer member.
30. The container of claim 22, wherein the cylindrical outer member, the cylindrical inner dividing member and the sealing member are substantially ridged.
31. The container of claim 30, wherein the cylindrical outer member, the cylindrical inner dividing member and the sealing member are metal or plastic.
32. The container of claim 22, wherein the cylindrical outer member and the cylindrical inner dividing member are substantially transparent.
33. The container of claim 22, wherein the cylindrical outer member and the cylindrical inner dividing member are approximately the same height.

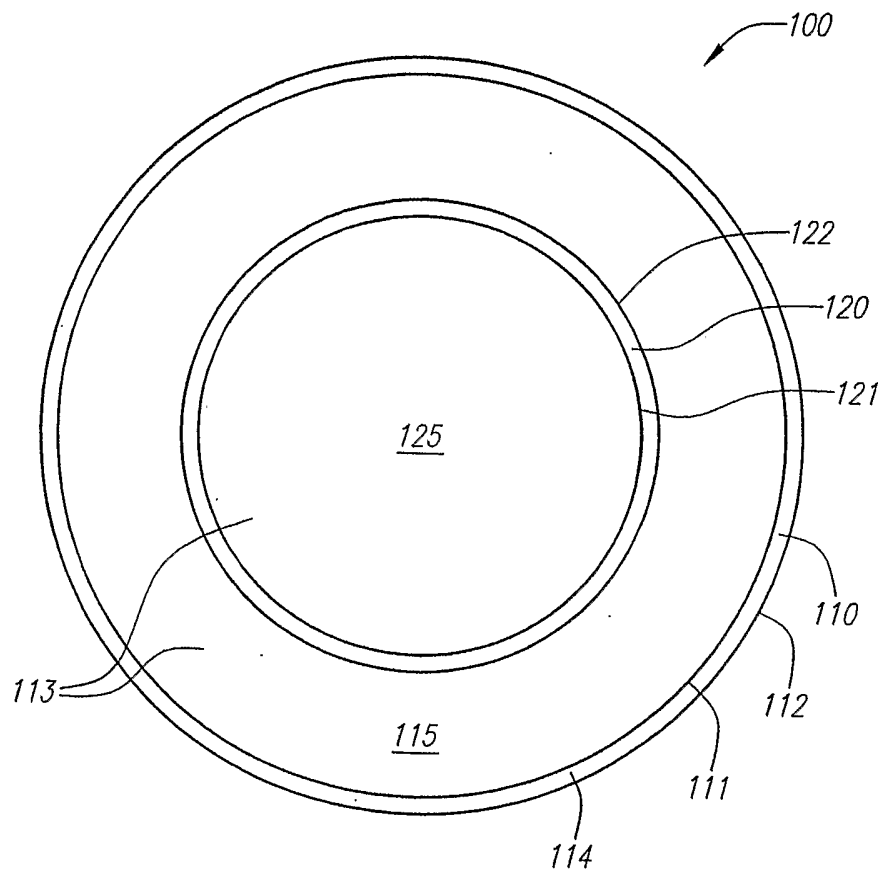
34. The container of claim 22, wherein the sealing member comprises a lid that is placed across the tops of the cylindrical outer member and the cylindrical inner dividing member to seal the container.
35. The container of claim 22, wherein an underside of the sealing member includes a cushion that sealingly engages a top edge or surface of the cylindrical inner dividing member.
36. The container of claim 22, wherein the cushion has substantially the same shape as a top edge or surface of the cylindrical inner dividing member.
37. The container of claim 22, wherein the cushion has an annular or ring-like shape.
38. The container of claim 22, wherein the sealing member is substantially ridged.
39. The container of claim 22, wherein the sealing member is metal or plastic.
40. A packaged liquid-based food item, comprising
a container having an outer member and a vertical dividing member, wherein the outer member has a bottom, one or more sides extending upwardly from the bottom, and an inner surface, the vertical dividing member has inner and outer surfaces and is positioned inside the outer member, the inner surface of the inner dividing member at least partially defines an inner cavity, and the outer surface of the inner dividing member and the inner surface of the outer member define an outer annular cavity;
a liquid;
a seasoning;
a plurality of particulates, wherein the liquid and the seasoning are in the inner cavity and the particulates are in the outer cavity, thereby separating the seasoning from the particulates so that the seasoning does not diffuse into the particulates; and
a sealing member that extends across tops of the outer member and the vertical dividing member to close the container, whereby when the sealing member is removed to open the container, the liquid, the seasoning, and the particulates are pourable from their respective cavities in a single motion.

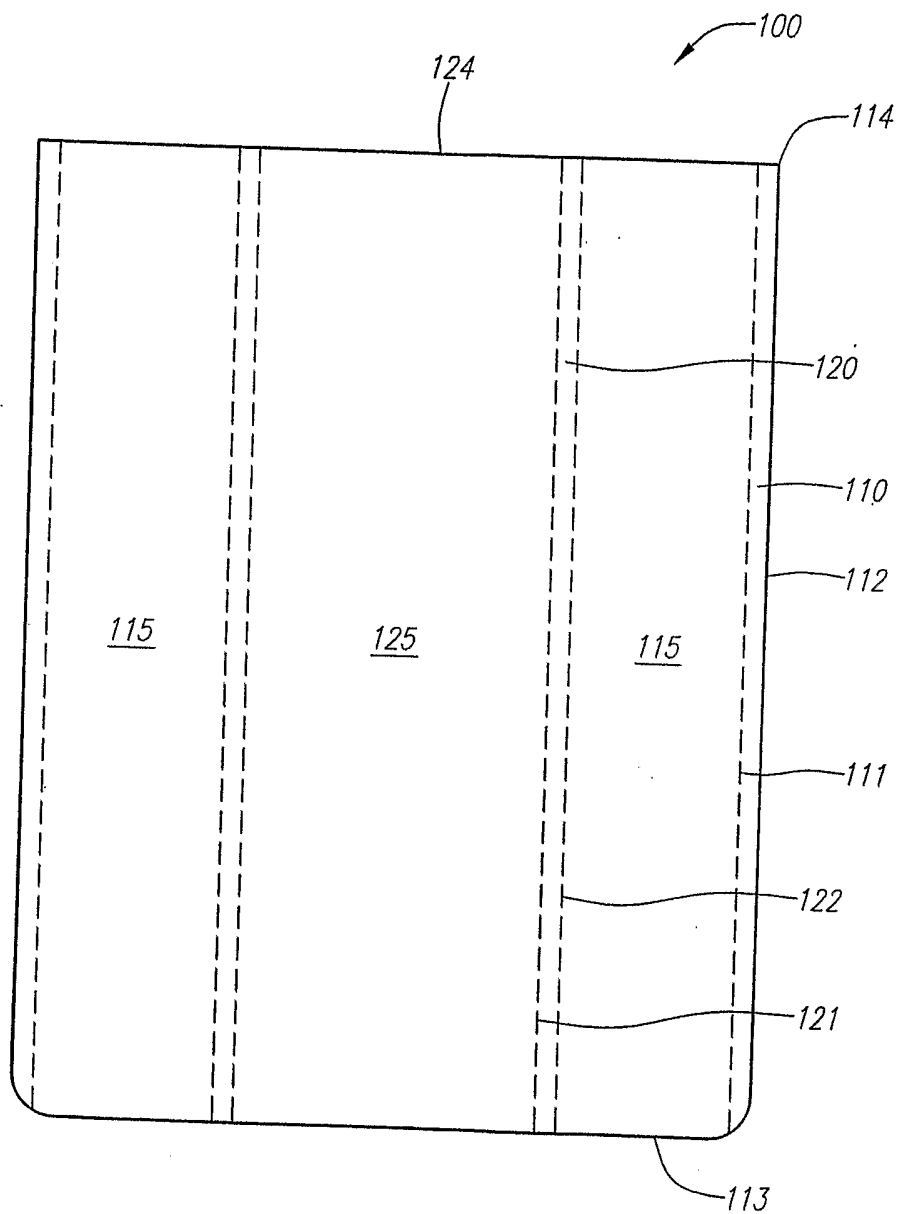
41. The packaged liquid-based food item of claim 40, wherein the outer member is cylindrical.
42. The packaged liquid-based food item of claim 40, wherein the vertical dividing member is cylindrical.
43. The packaged liquid-based food item of claim 40, wherein the inner surface of the vertical dividing member exclusively defines the inner cavity.
44. The packaged liquid-based food item of claim 40, wherein the outer member, the vertical dividing member and the sealing member are substantially ridged.
45. The packaged liquid-based food item of claim 44, wherein the outer member, the vertical dividing member and the sealing member are metal or plastic.
46. The packaged liquid-based food item of claim 40, wherein the outer member and the vertical dividing member are substantially transparent.
47. The packaged liquid-based food item of claim 40, wherein the sealing member comprises a lid that is placed across the tops of the outer member and the inner dividing member to seal the container, and wherein an underside of the sealing member includes a cushion that sealingly engages a top edge or surface of the vertical dividing member.
48. The packaged liquid-based food item of claim 40, wherein the outer cavity includes the particulates and water.

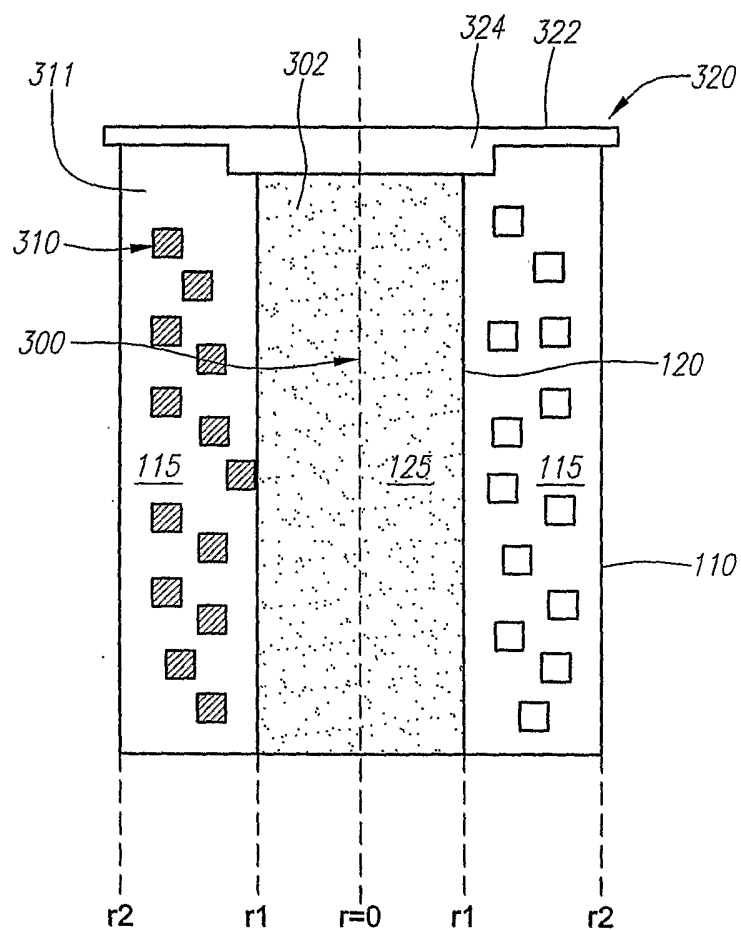
49. A packaged liquid-based food item, comprising
- a substantially rigid cylindrical outer member, the cylindrical outer member having a bottom, one or more sides extending upwardly from the bottom to a top of the cylindrical outer member, and an inner surface;
 - a substantially rigid cylindrical dividing member having inner and outer surfaces, wherein the cylindrical dividing member is positioned inside the cylindrical outer member and at least partially defines a cylindrical inner cavity, and wherein the outer surface of the cylindrical inner dividing member and the inner surface of the cylindrical outer member define an annular outer cavity;
 - a liquid;
 - a seasoning;
 - a plurality of particulates, wherein the liquid and the seasoning are placed in the cylindrical inner cavity and the particulates are placed in the annular outer cavity so that the seasoning is separated from the particulates to prevent the seasoning from diffusing into the particulates; and
 - a substantially rigid circular sealing member that extends across the tops of the cylindrical inner dividing member and the cylindrical outer member to close the container, and when the circular sealing member is removed to open the container, the liquid, the seasoning, and the particulates are pourable from their respective cavities in a single motion.
50. The packaged liquid-based food item of claim 49, wherein the inner surface of the cylindrical dividing member exclusively defines the inner cavity.
51. The packaged liquid-based food item of claim 49, wherein the cylindrical outer member, the cylindrical dividing member and the sealing member are substantially ridged.
52. The packaged liquid-based food item of claim 51, wherein the outer member, the cylindrical dividing member and the sealing member are metal or plastic.
53. The packaged liquid-based food item of claim 49, wherein the cylindrical outer member and the cylindrical dividing member are substantially transparent.

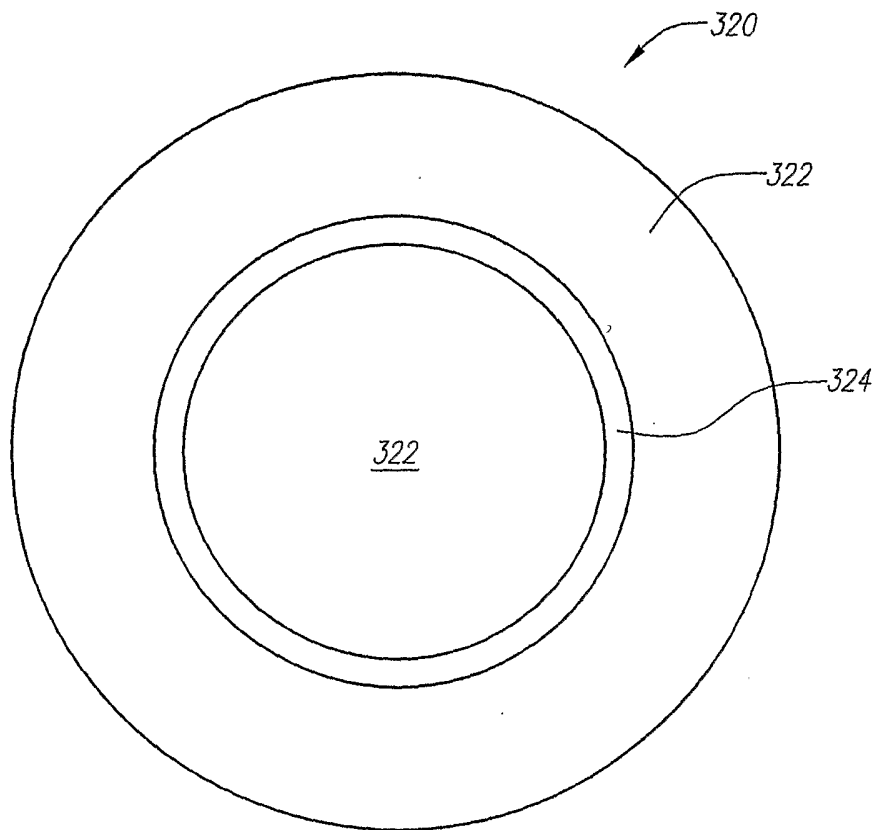
54. The packaged liquid-based food item of claim 49, wherein the sealing member comprises a lid that is placed across the tops of the cylindrical outer member and the cylindrical dividing member to seal the container, and wherein an underside of the sealing member includes a cushion that sealingly engages a top edge or surface of the cylindrical dividing member.

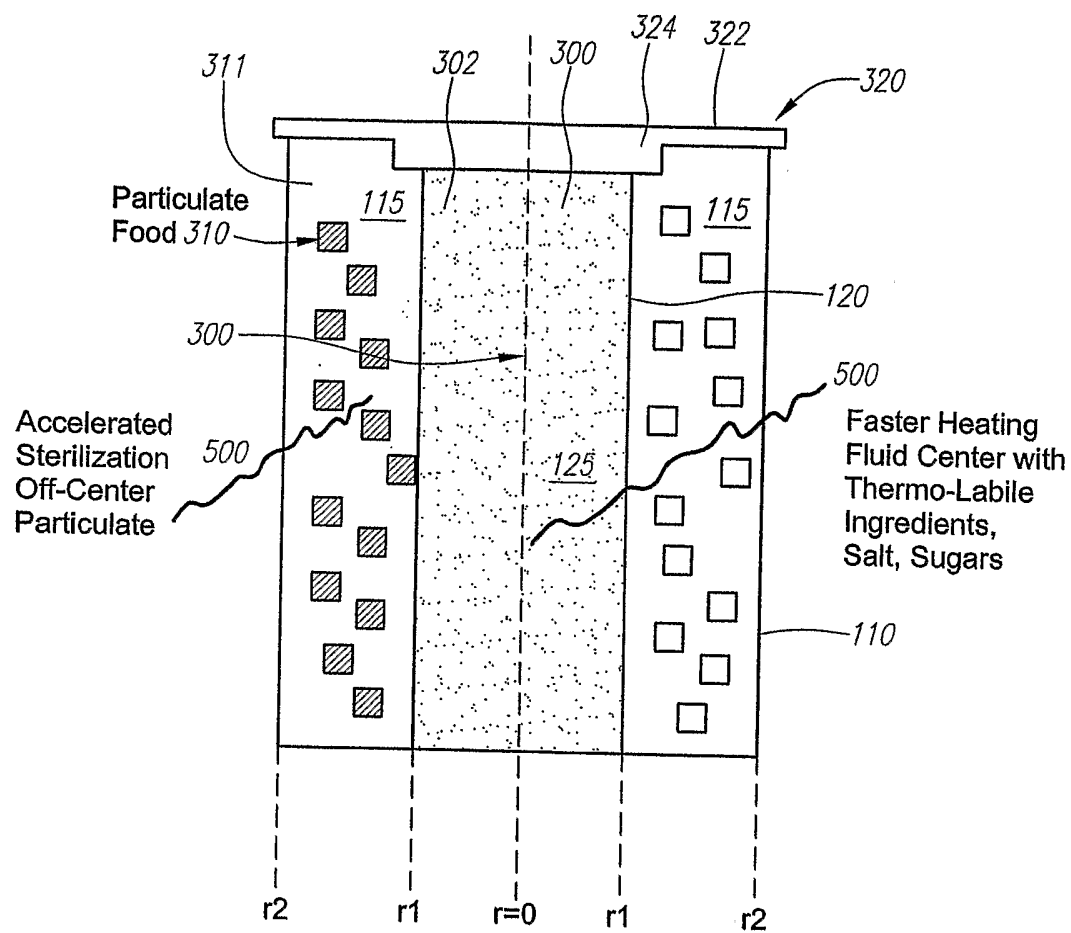
55. The packaged liquid-based food item of claim 49, wherein the outer cavity includes the particulates and water.

**FIG. 1**

*FIG. 2*

*FIG. 3*

**FIG. 4**

**FIG. 5**

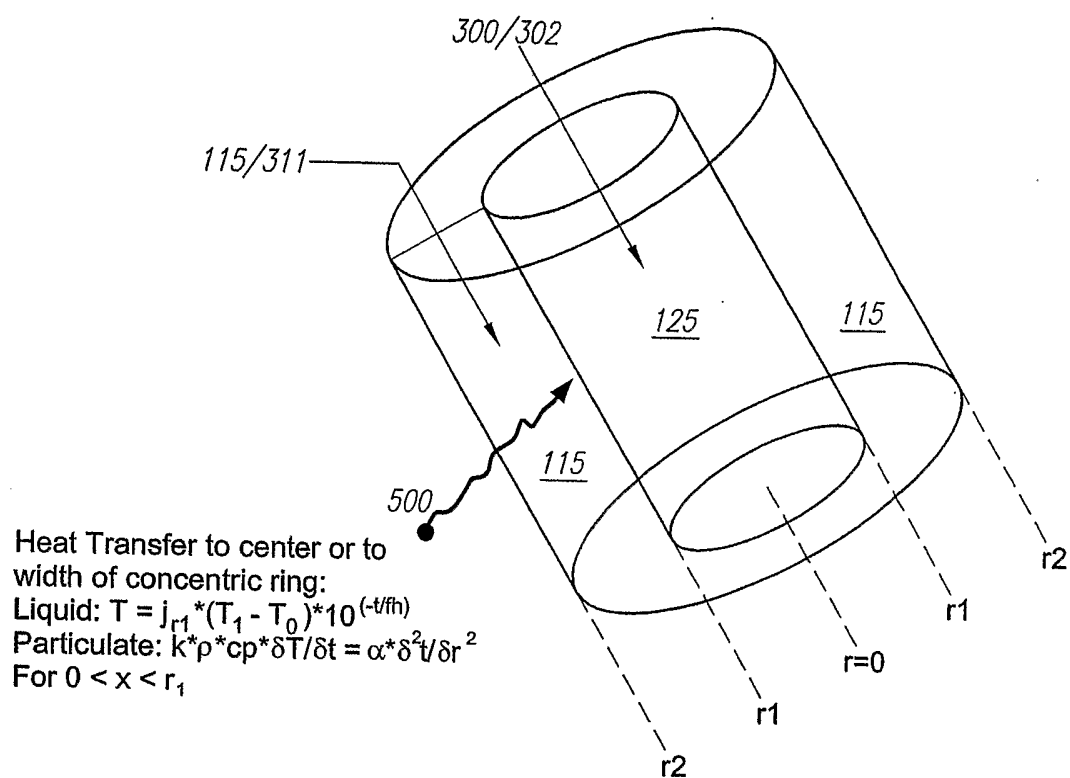


FIG. 6

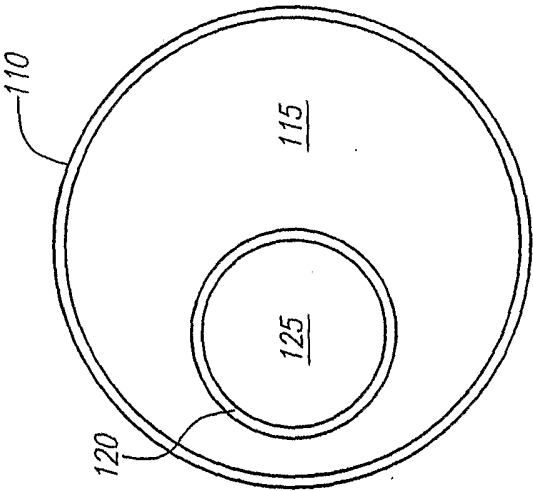


FIG. 7

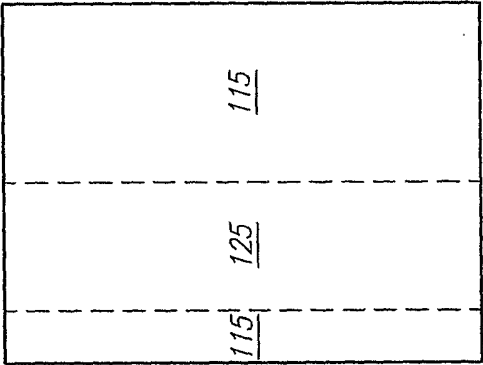


FIG. 8

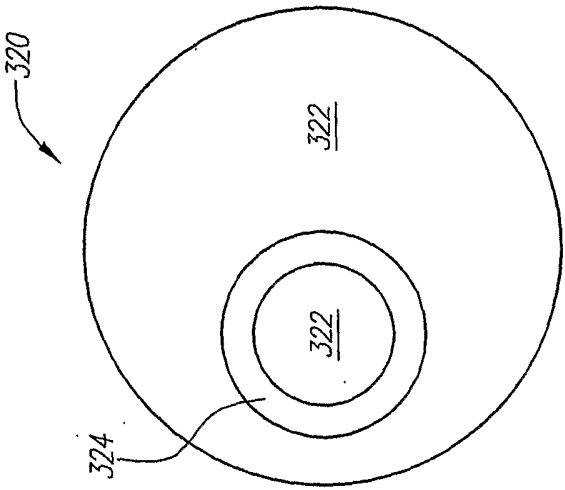


FIG. 9

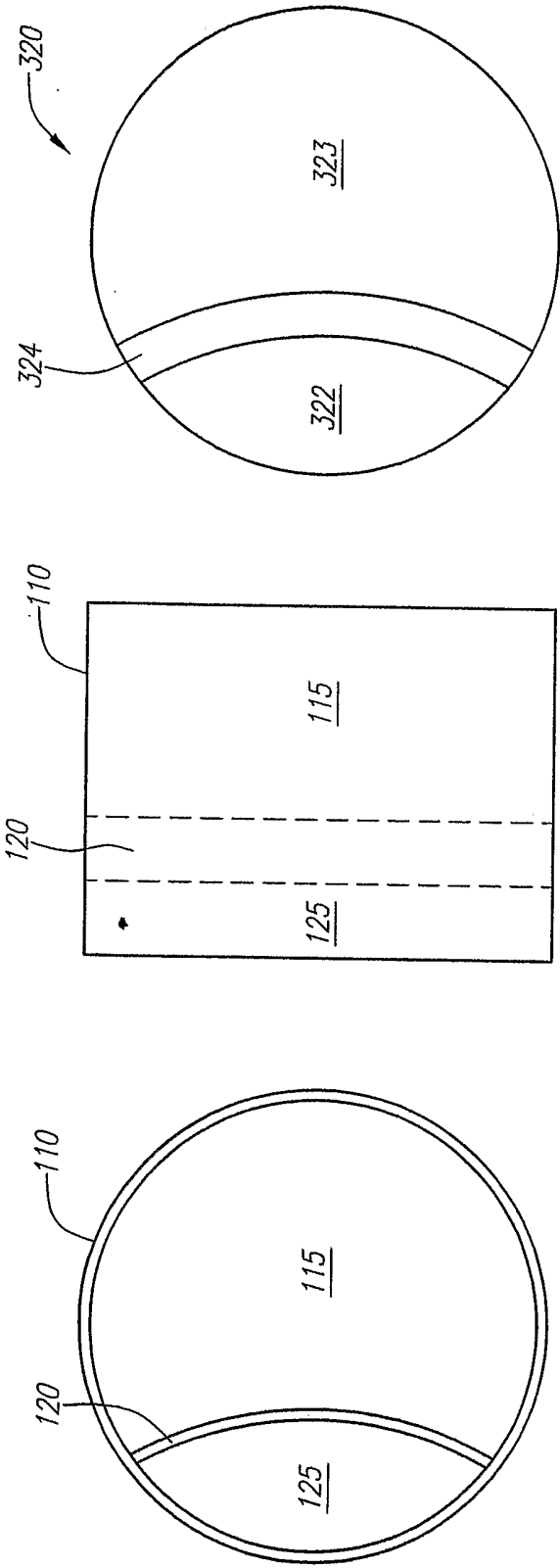


FIG. 10

FIG. 11

FIG. 12

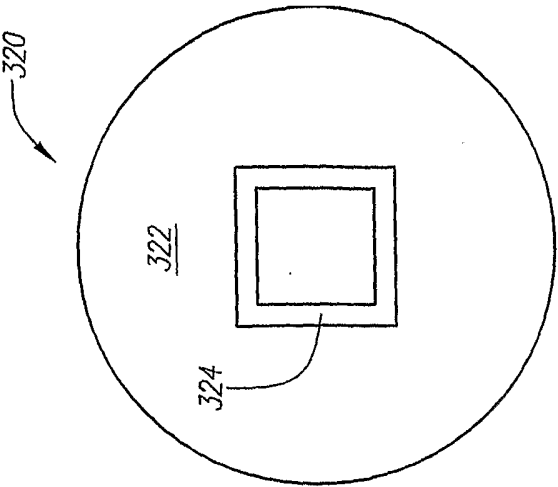


FIG. 15

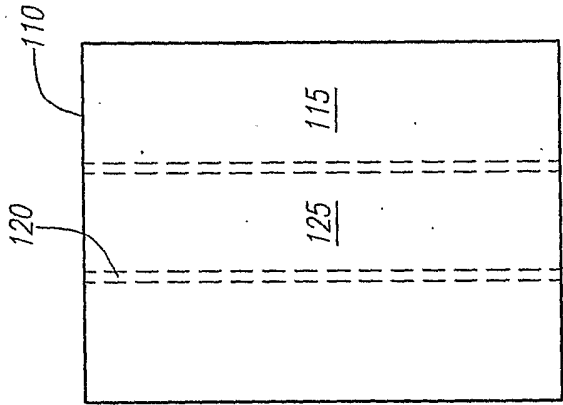


FIG. 14

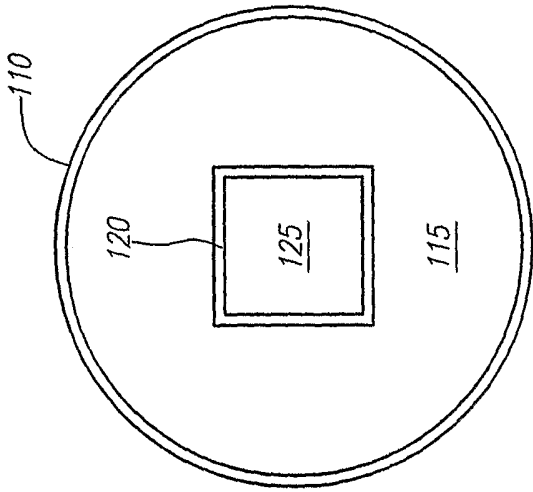


FIG. 13

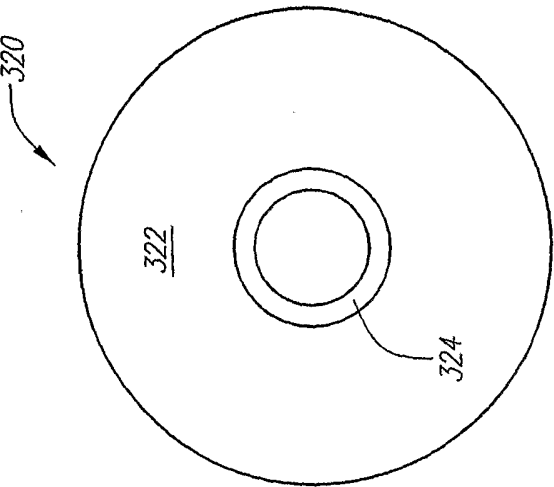


FIG. 16

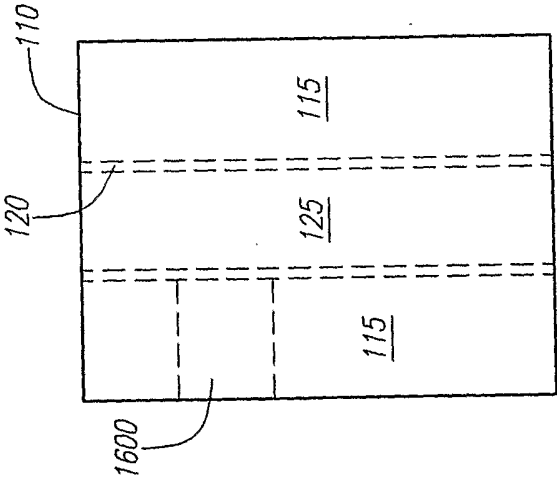


FIG. 17

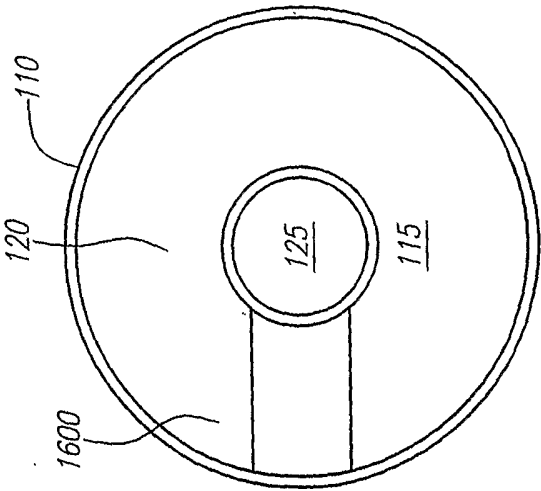


FIG. 18

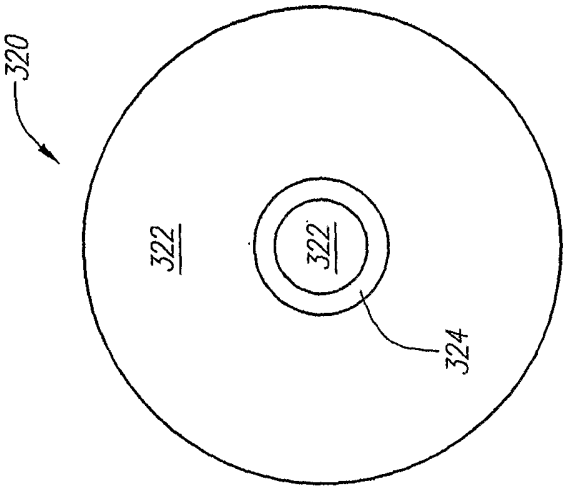


FIG. 21

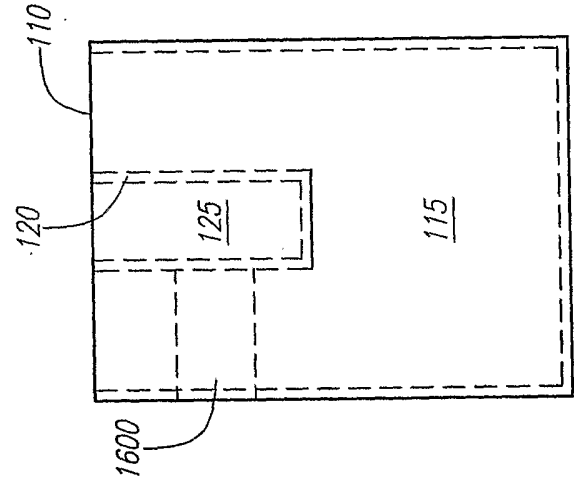


FIG. 20

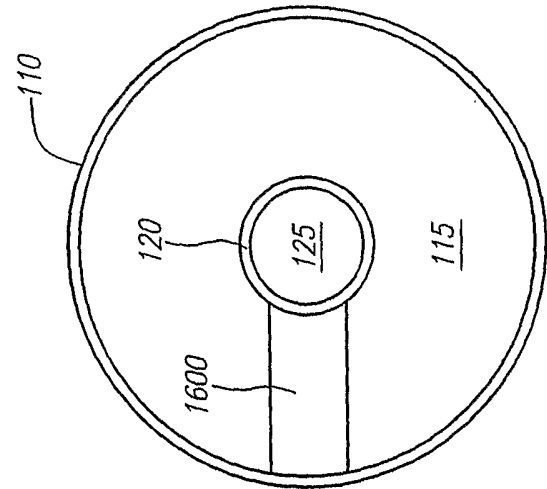


FIG. 19

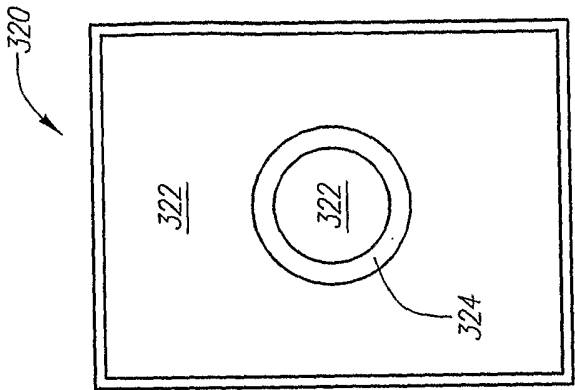


FIG. 22

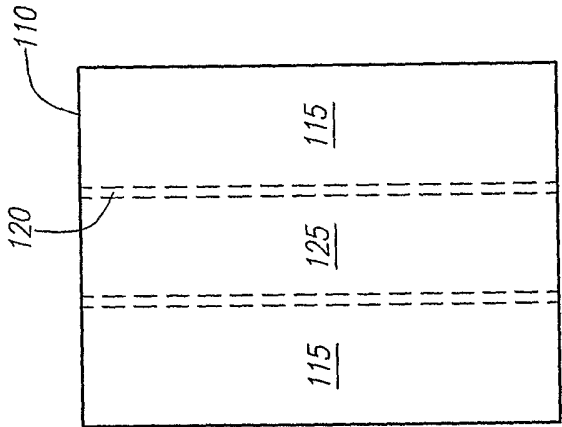


FIG. 23

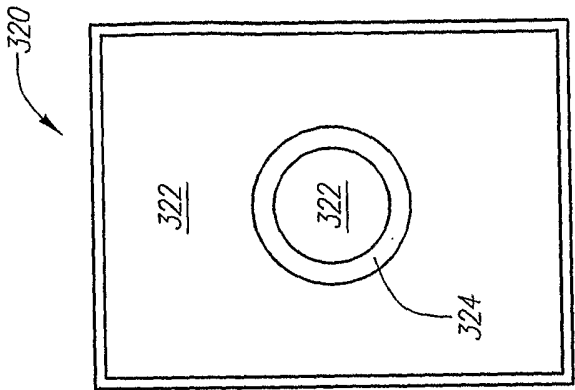
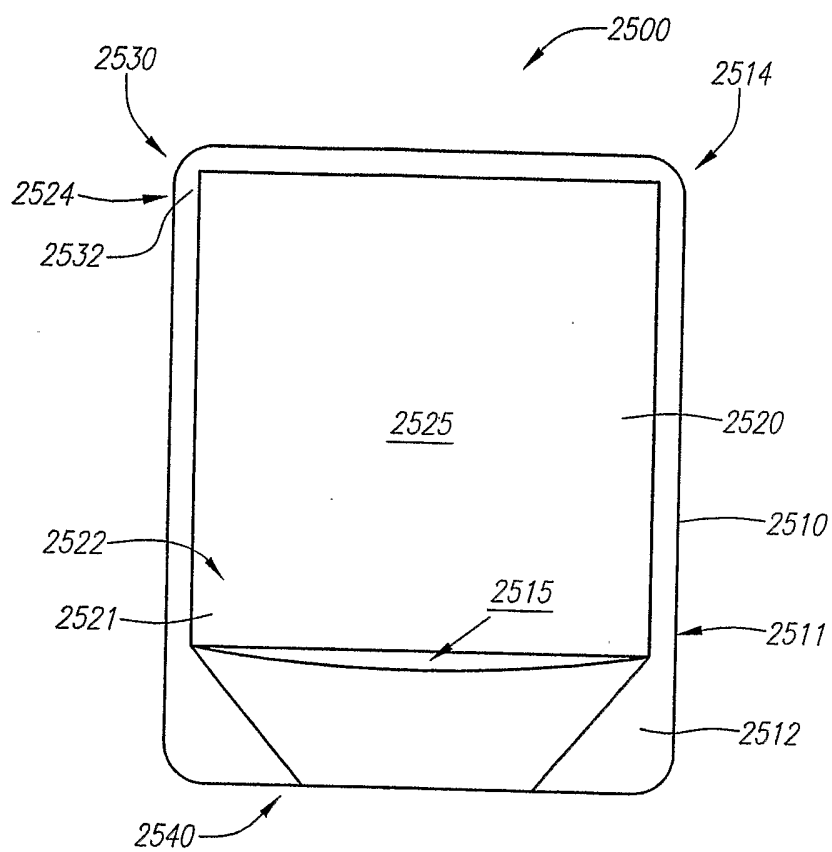


FIG. 24

*FIG. 25*

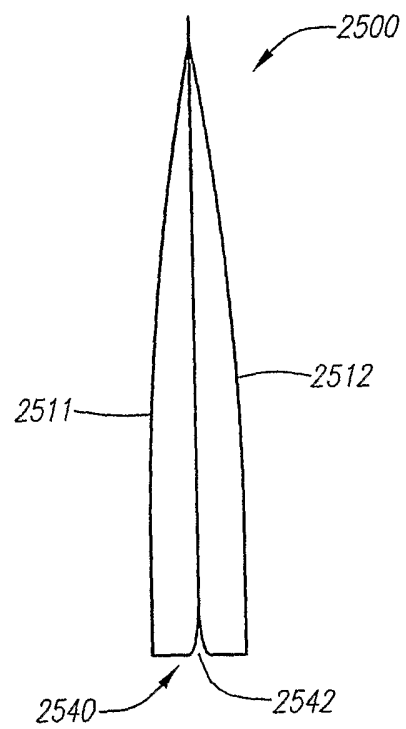


FIG. 26

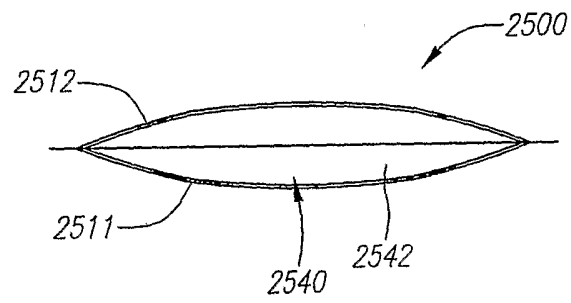


FIG. 27

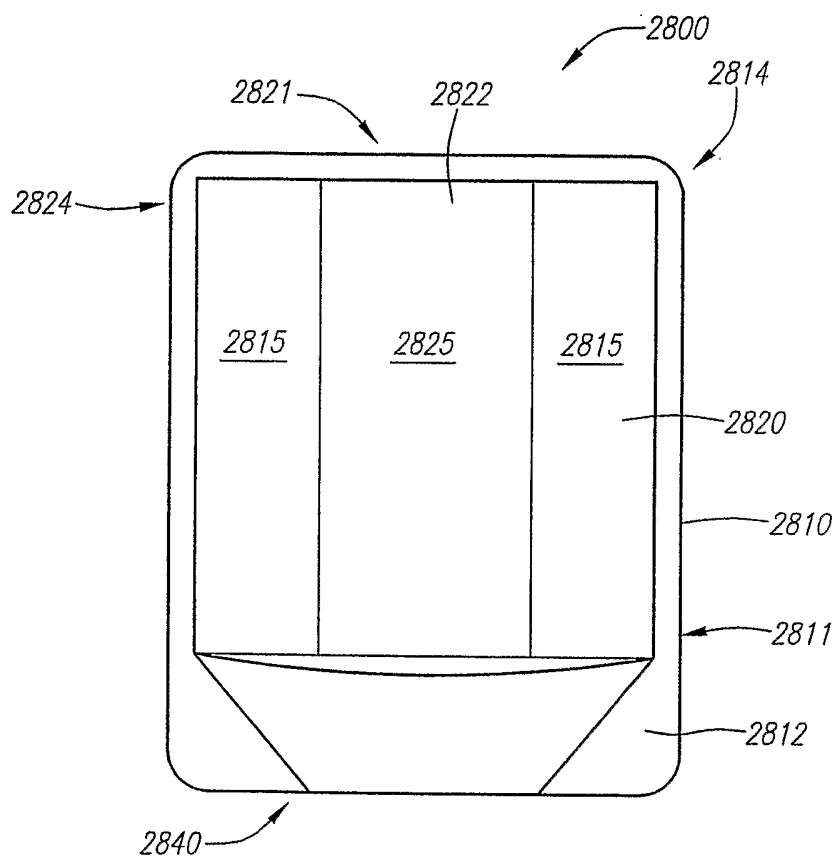


FIG. 28

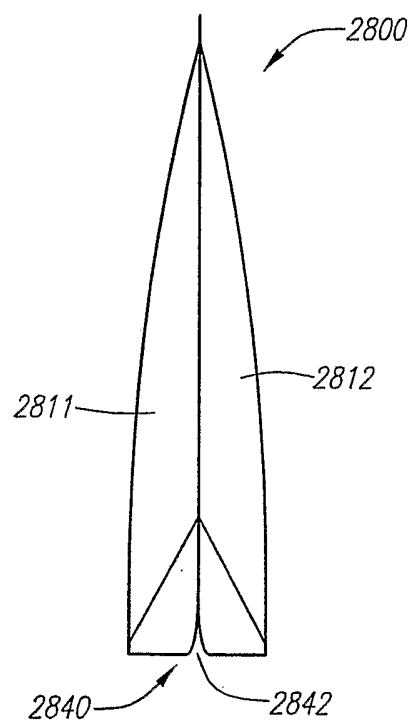


FIG. 29

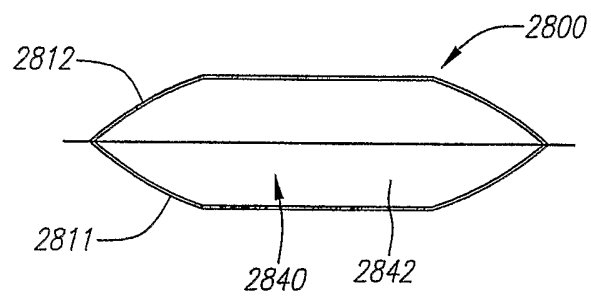


FIG. 30

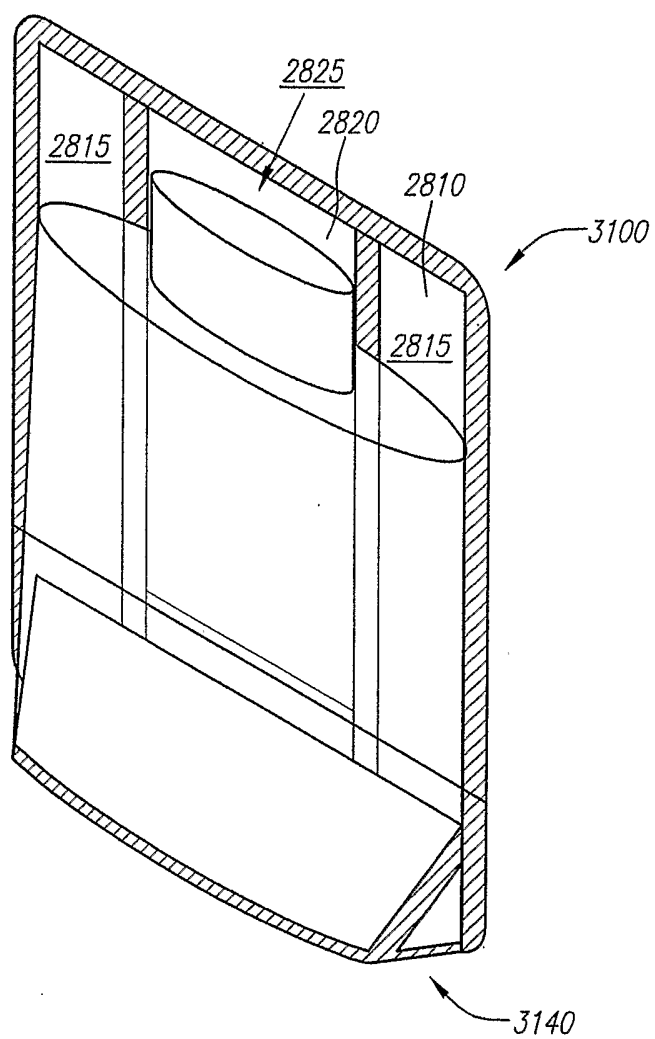
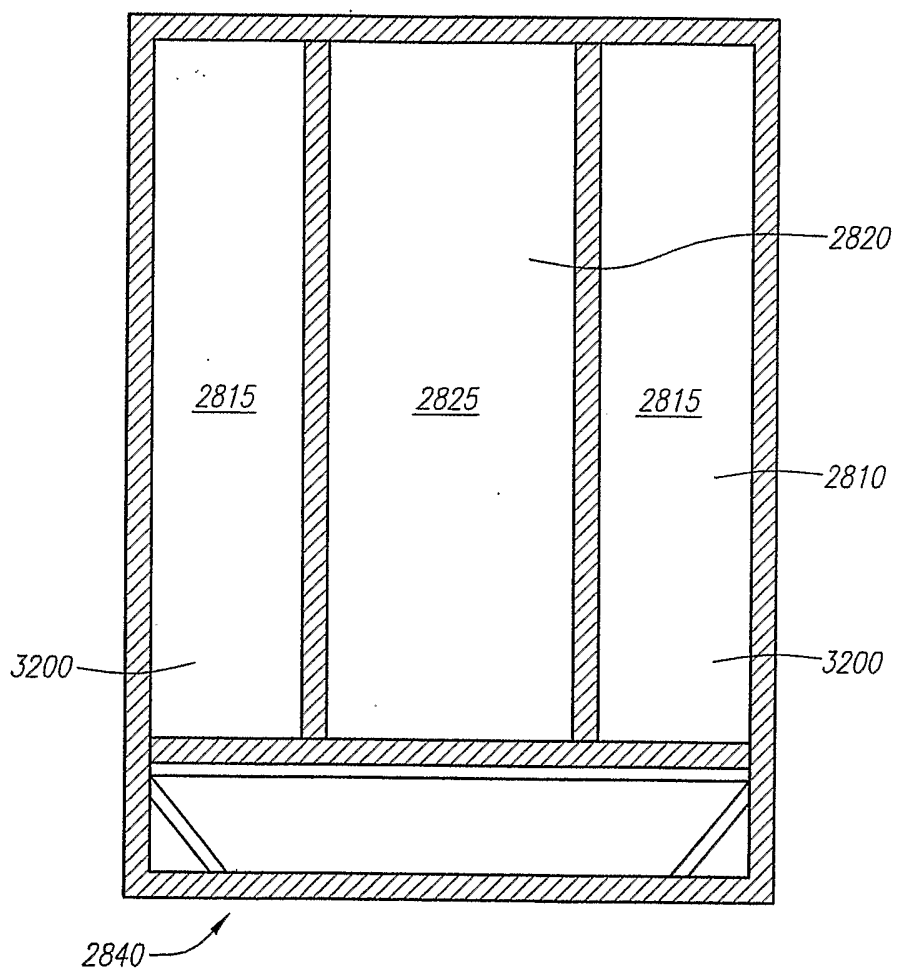
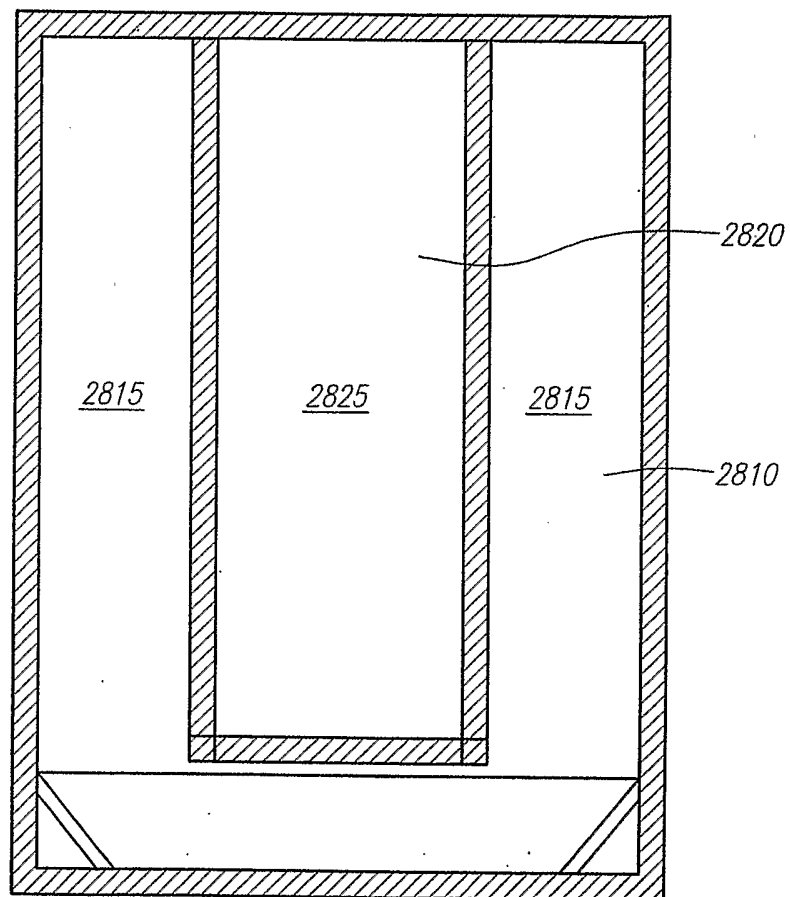


FIG. 31

**FIG. 32**

*FIG. 33*

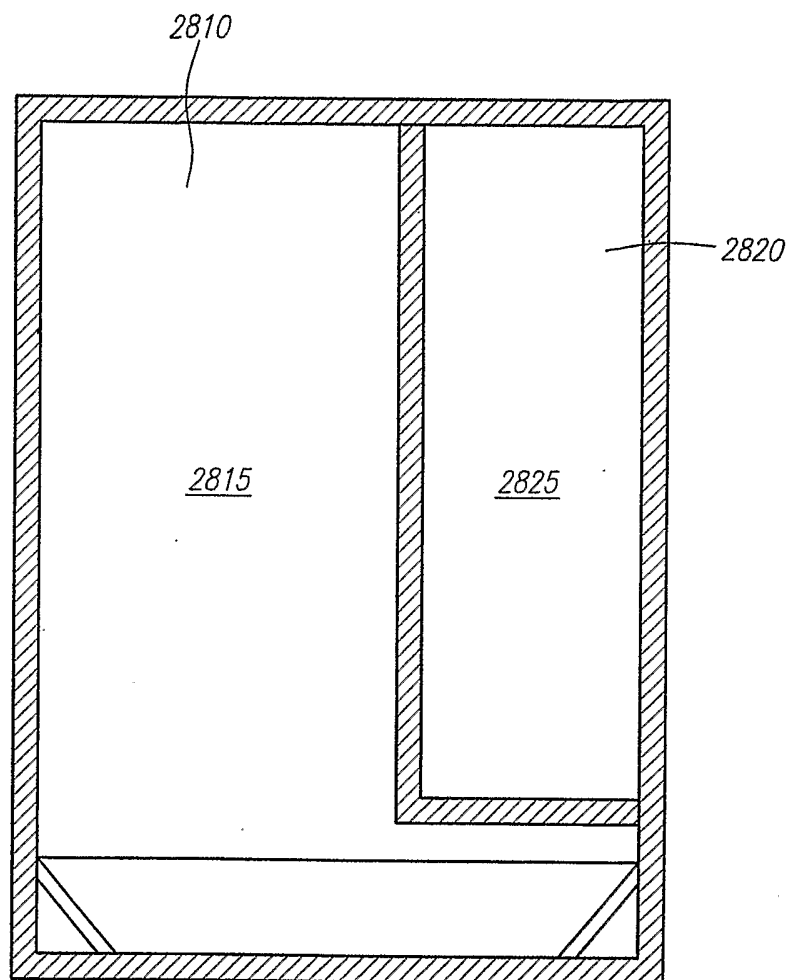
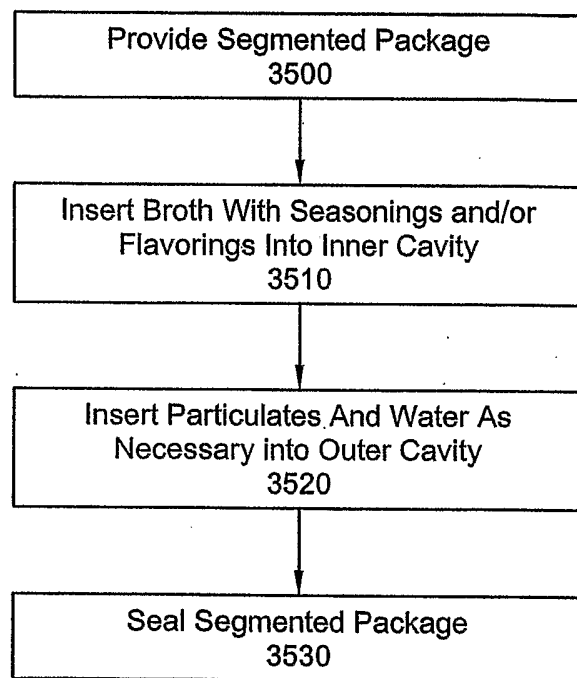


FIG. 34

*FIG. 35*