

June 29, 1965

T. A. GUTOWSKI ETAL

3,191,849

REINFORCED COMMODITY CONTAINER

Filed Feb. 10, 1964

2 Sheets-Sheet 1

Fig. 1

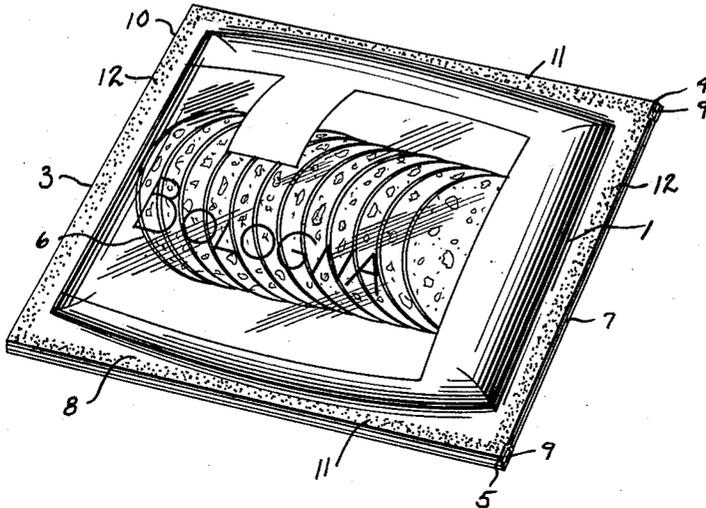


Fig. 2

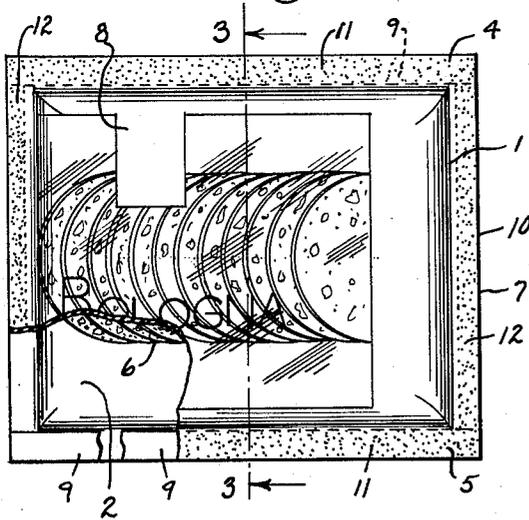
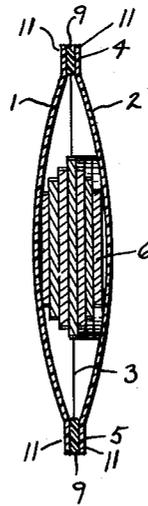


Fig. 3



INVENTORS
THAD A. GUTOWSKI
GLENN R. SONTAG

BY

Donald G. Kasso
ATTORNEY

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T. A. GUTOWSKI ETAL

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2 Sheets-Sheet 2

Fig. 4

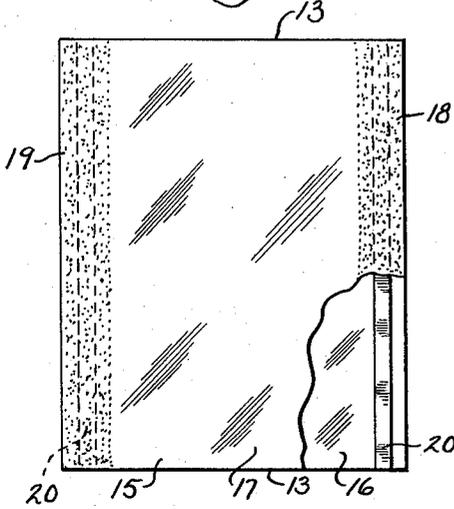


Fig. 6

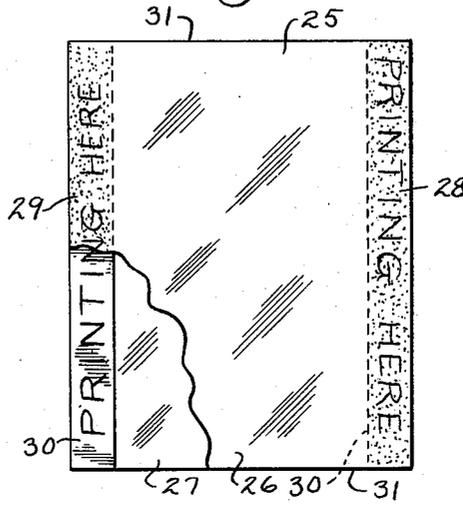


Fig. 5

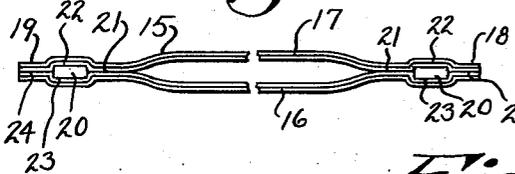


Fig. 7

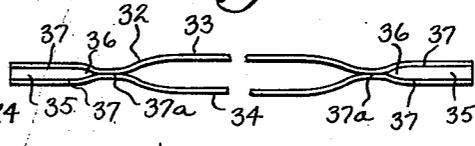


Fig. 8

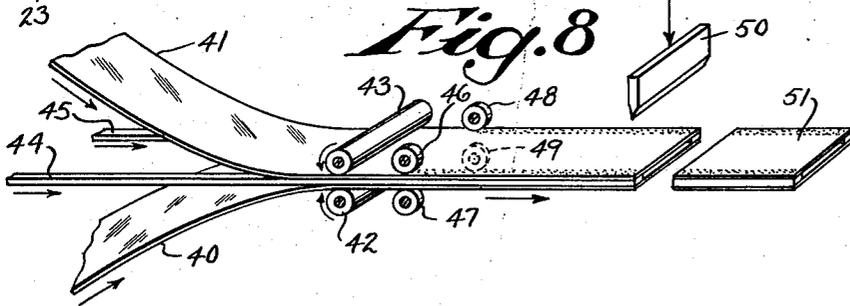
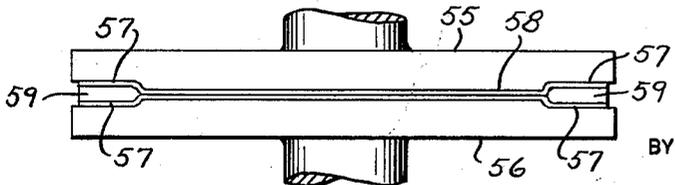


Fig. 9



INVENTORS
THAD A. GUTOWSKI
GLENN R. SONTAG

BY
Donald J. Casar

ATTORNEY

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3,191,849

REINFORCED COMMODITY CONTAINER

Thad A. Gutowski, Niles, Ill., and Glenn R. Sontag, Brown Deer, Wis., assignors to Milprint, Inc., Milwaukee, Wis., a corporation of Delaware
 Filed Feb. 10, 1964, Ser. No. 343,697
 6 Claims. (Cl. 229—55)

The present invention relates to a flexible commodity container; more particularly, it relates to a commodity container comprising a pair of superposed sheets of flexible packaging material joined together along marginal seam areas and wherein some of the marginal seam areas, preferably opposed edge seams, include a semi-rigid support member to reinforce the container edges and restrict deformation of the container when used to package commodities, especially when using vacuum packaging techniques.

Many types of commodities, such as sausages, other processed meats and cold cuts, are commonly sliced and packaged in small quantities in transparent packages to be set out in self-service refrigerated cabinets for selection by the customers. When the surface of such meats has been exposed, the influence of the atmosphere and bacterial action will cause them to discolor quite rapidly, creating an illusion that the quality of the meats has deteriorated, and that the meats may no longer be safe to consume. Hence, it has become the practice to evacuate the air from such packages before sealing them, and in some cases, to introduce an inert gas such as nitrogen into the package.

However, containers of flexible, transparent packaging material of the type typically used for such packages, cannot retain their shape under the force of atmospheric pressure after the air inside the package has been even partially evacuated, and the edges of the packages often wrinkle, buckle or otherwise deform. Since these packages are intended primarily for merchandising in self-service stores, deformation of the package can have an extraordinarily adverse effect upon the sales appeal of the package. Such wrinkled and deformed edge areas cannot be used to bear any printed materials such as trademarks, notices of content and the like. Hence, the only area available for such printing is directly over the commodity, which area is desirably left unprinted in order to advantageously display the packaged commodity. Also, if the edge areas are not printed or otherwise colored, but left in their normal clear state, the wrinkling and deformation of those areas gives them a discolored, shop worn appearance, destroying its appeal to the customers.

In the past, many of the disadvantages of disfiguration of the package have been avoided by inserting the package into an exterior cardboard folder or container that has a window in the center of its front surface just large enough to expose the meat product without showing the wrinkled edge portions of the package. Such printing and advertising as may be desired can then be placed upon the cardboard container, around the window. Packages of this type are shown, for example, in United States Patent No. 2,802,569. The use of such a cardboard container, however, greatly increases the cost of packaging such products. Hence, there is a need for a container formed of flexible sheet packaging material to package commodities, particularly meats, meat products and other comestibles, in a single package that will retain its shape and present an attractive appearance without the use of exterior cardboard containers, folders or similar devices; this invention satisfies that need.

According to the present invention, comparatively rigid support members are inserted within marginal seam areas of a container formed from flexible sheet packaging mate-

rial and, surprisingly, these support members have been adequate to preserve the shape of a package using the container, giving the package a semi-rigid structure, without significantly adding to the bulk of the package or its cost. The seam areas of the package which are thus held flat can be exposed to the view of the public and used for printing purposes, such as on the support member itself in one form of this invention. Hence, the cardboard exterior container can be dispensed with. In addition to those advantages, it has been found that with such a supporting member in a marginal seam, a hole may be pierced through the seam and support member and used to hang the package itself on a display rack, thus enhancing its attractiveness and conserving on the space required.

Accordingly, an object of the present invention is to provide a flexible commodity container that includes marginal support members.

Another object of the present invention is to provide a commodity container of flexible packaging material that will have substantially reduced deformation as compared to presently known containers, particularly when used in vacuum packaging techniques.

A further object of the present invention is to provide a flexible commodity container that includes support or rigidifying members in some of its marginal seam areas to restrict deformation of packages using the container. A related object is to provide a method for the manufacture of containers of the prescribed type.

The foregoing and other objects will appear in the description to follow. In the description, reference is made to the accompanying drawings which form a part hereof and in which there are shown by way of illustration several specific embodiments in which this invention may be practiced. These embodiments will be described in sufficient detail to enable those skilled in the art to practice this invention, but it is to be understood that other embodiments of the invention may be used and that structural changes may be made in the embodiments described without departing from the scope of the invention. Consequently, the following detailed description need not be taken in a limiting sense; instead, the scope of the present invention is best defined by the appended claims.

In the drawings:

FIG. 1 is a perspective view of one embodiment of the present invention;

FIG. 2 is a top view of the embodiment shown in FIG. 1 with a portion of the container cut away to disclose its structure;

FIG. 3 is a view in section of the embodiment shown in FIGS. 1 and 2, taken along the plane of line 3—3 of FIG. 2, looking in the direction of the arrows;

FIG. 4 is a top view, with a portion broken away, of a second embodiment of this invention;

FIG. 5 is an enlarged end view, with a portion broken away, of the container of FIG. 4;

FIG. 6 is a plan view, with a portion broken way, of still another embodiment of this invention;

FIG. 7 is an end view with a portion broken away, showing an alternate construction for the support members in the containers of this invention;

FIG. 8 is a schematic view of a method for manufacturing the containers of this invention; and

FIG. 9 illustrates a form of heat-sealing bars for use in forming marginal heat seal seams in the containers of this invention.

FIGS. 1—3 illustrate a container 10 constructed in accordance with this invention as used to package a commodity 6 comprising sliced meat product. The container 10 is formed of two superposed sheets of flexible packaging material, such as polyethylene film, polyester film, polypropylene film, foil, various laminates of these films,

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and other suitable materials, and each sheet will normally be about one to four mils thick, although thicker materials can also be used. The container 10 includes a top sheet 1 and a bottom sheet 2 joined together along marginal portions at their sides 4 and 5 and ends 3 and 7 to form a container of envelope or pouch configuration. For best results, the marginal seams are heat-sealed and the sheets 1 and 2 are made of thermoplastic heat sealable material or flexible material coated with a thermoplastic heat sealable coating. The top sheet 1 may include a colored border 8 to carry printing, with the central portion of the sheet left open to view the packaged commodity when the container is made of transparent material.

In each of the marginal edges 4 and 5 there is disposed a support member 9 that extends across the container from end to end as illustrated in FIGS. 1 and 2. Each support member is placed between the sheets and has one surface contacting one sheet and a second surface contacting the other sheet. The support members 9, shown herein as thin rectangular strips, are to lend support to the side edges of the container so as to give rigidity to the container structure and limit distortion or deformation of the container when used to package commodities. The strips 9 can comprise a strip of, for example, polyethylene so as to be heat sealable and should be thicker than either sheet.

Turning now to FIG. 3, heat seal seams 11 are formed to join marginal portions of each sheet to their contacting surface of the support members in the manner indicated in the drawing. In this fashion, the support members are secured in two side edges of the container to strengthen the same against distortion, buckling, etc. At the same time, a good seam can be formed that will be tight enough to inhibit leakage of air or other gas around the reinforced marginal areas. To complete the closure of the container, heat seals 12 are formed at each end 3 and 7 to join the top sheet and the bottom sheet to each other along these marginal portions.

FIGS. 4 and 5 show a second form of container constructed in accordance with this invention. The container 15 includes a bottom sheet 16 and top sheet 17 joined along their marginal portions 18 and 19 to form a sleeve or tube-like pouch. In each of these marginal portions, there is inserted a support member 20 that is of the same length as the side edges of the sheets 16 and 17 which it contacts. These support members serve the same function as the support members 9 in the embodiment of FIGS. 1-3, i.e. to reinforce and support the edges of the container structure to reduce distortion of the same when used to package commodities.

Turning now to the end view of the container 15 shown in FIG. 5, each sheet 16 and 17 is of two-ply construction. Examples of suitable materials for these sheets include laminates of polyethylene terephthalate polyester film (Mylar polyester) and polypropylene, and laminates of cellophane with low-density polyethylene; three-ply laminates, such as a laminate of Mylar polyester, aluminum foil and polypropylene, are also useful for manufacture of the containers. In addition, other materials can be used and the container 15 may be formed from single ply sheet material.

A feature of the container 15 is the relationship of the width of each support member 20 to its respective marginal seam. In this container, the sheets 16 and 17 are heat sealed to one another alongside the inner edge of the support members as indicated at 21 in FIG. 5; the bottom sheet 16 is heat sealed to one surface of the support member and the top sheet 17 to a second surface of the support member in the areas indicated at 22 and 23 respectively; and the sheets 16 and 17 are again heat sealed to one another alongside the other edge of the support members 20 as indicated at 24. In this construction, then, the marginal heat seal seams extend on both sides of the support member, i. e. the seams are wider than the support member, whereas in the form of FIGS.

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1-3 the support members are the same width as the marginal heat seal seams. This construction further enhances the closure along each seam containing a support member in order to provide a container useful in various types of packaging applications.

In the embodiment shown in FIG. 6, the pouch 25 is formed from top and bottom sheets 26 and 27 joined along marginal seams 28 and 29 that include support members 30 in accordance with prior embodiments. However, in this instance, the support members 30 are to carry printing, coloring, or other decorative or informative effects. For this purpose, the support members can be made of a printed metal foil coated on both sides with polyethylene or other heat sealable coating, or they can be formed of cardboard, paperboard and the like, also coated with a suitable heat sealable coating. This form enables the support members to carry trademark, goods description or any other type of information, as well as decorative effects. This can be utilized to dispense with printing on the walls of the package itself, thereby making a relatively large clear area available for viewing the contents of the container.

FIG. 7 shows an end view of still another container in accordance with this invention in which the unique feature resides in the cross-sectional configuration of the support members used in the marginal or edge portions of the container. The pouch 32 comprises top sheet 33 and bottom sheet 34 joined along their opposed marginal areas to opposite surfaces of support members 35 by means of heat seals. The support members 35 have a curved inner edge 36 and the heat seals 37 at the edges are wider than the support members 35 so that the two sheets of the pouch are joined to one another alongside the curved inner edge of the support members as indicated at 37a. This construction enables the walls of the container to more fairly conform to the outline of the support members in the marginal seams and facilitates the formation of a good leak-proof seal in these areas.

A schematic representation of a method suitable for the manufacture of the containers of this invention is shown in FIG. 8. A web 40 and a web 41 of flexible sheet material, both withdrawn from a supply roll thereof not shown, are advanced through a pair of closely spaced rollers 42 and 43. The webs 40 and 41 comprise the materials for the walls of the containers. Concurrently, two thin strips 44 and 45 of support member material are fed between the webs 40 and 41, with one strip arranged along each longitudinal marginal area between the two webs. Then the two webs 40 and 41 and strips 44 and 45 are advanced through the rollers 42 and 43 so that the webs are urged into contact with the strips along their longitudinal marginal edges. Just after passing through the rollers, the webs of sheet material with strips of support member inserted along each longitudinal edge between the sheets pass through a set of heat sealers 46, 47, 48 and 49. The heat sealers are arranged to provide a heat seal seam along each edge of the advancing webs to join the top web and the bottom web to the respective surface of the strips 44 and 45 that they contact. The heat sealers are kept at a sufficiently high temperature to heat seal the webs 40 and 41 to the strips 44 and 45 along their respective marginal areas. The heat sealing temperature should be such that the interfaces between the webs 40 and 41 and the surfaces of the strips 44 and 45 that they contact reach a sufficient temperature to form a good strong heat seal bond. At the same time, there should not be so much heat as to cause distortion of the strips 44 and 45, as would occur if the heat sealing temperature was high enough to raise the temperature at the interior of the strips 44 and 45 of the support material above their softening temperature and cause them to flow or otherwise deform.

After passing through the heat sealers, the webs 40 and 41 and strips 44 and 45 are joined to form a continuous tube-like body having reinforcing support members along

its longitudinal edges. The material is then led through a suitable cutting device 50 that moves up and down so as to transversely cut the material to form individual containers 51 of the desired size and in the construction of this invention. As indicated above, FIG. 8 is schematic only; the heat sealers and cutting device are shown therein in a diagrammatic form, and they and the omitted appliances such as drive means, guide rolls, supply rolls, etc., can comprise mechanisms typically used in the converting field, as will be apparent to those skilled in the art.

In order to complete closure of the container shown in the preceding figures, it is necessary to seal the marginal portions that do not include support members. End portions 3 and 7 of container 10 (FIGS. 1-3), end portions 13 of container 15 (FIGS. 4 and 5), end portions 31 of container 25 (FIG. 6), and the ends of the container in FIG. 7 are to be sealed in the normal use of the containers in packaging commodities. In some instances, the containers can be supplied to the packager with both ends unsealed and the ends sealed after a commodity is put into the container. In other instances, the container can be supplied with one end sealed and the other end initially open to permit filling and then sealed after insertion of a commodity into a container.

A heat-sealing device suitable for sealing the end portions is illustrated in FIG. 9 as comprising a pair of opposed sealing bars 55 and 56. Each sealing bar has a cut-off corner portion 57 so as to receive the marginal areas of the containers 58 that include the support members 59. The sealing bars are connected to suitable heating means, not shown, so that they may be heated to the heat sealing temperature necessary to effect closure of the end portions of the container. The bars are to be of metal, and one bar may, if desired, be covered with a plastic material such as silicone rubber. The bars are connected to a suitable mechanism, also not shown but which may be of conventional construction, so that a container can be clamped between the bars and heat sealed under the application of the required pressure and temperature, after which the bars are separated by moving one or both bars, so as to release the heat sealed container.

The term "heat seal" as used herein is meant to refer to the process or property of softening or fusing to form a satisfactory bond between contacting portions of material upon the momentary application of heat and pressure. The temperatures employed are above the softening temperature of the material being heat-sealed when the material is thermoplastic and inherently heat sealable, or above the softening temperature of the heat seal coating in the case of a material which carries such a coating, the pressures generally vary between less than one pound to fifty pounds per square inch, and the "dwell time" during which the contacting material is subjected to the heat and pressure is normally from a fraction of a second to several seconds.

One of the important applications of the containers of this invention is in vacuum packaging. In this packaging technique, a commodity is put into the container, air is removed from the interior thereof by subjecting the package to a reduced air pressure (a partial vacuum although the term vacuum is customarily used in the art) in a suitable chamber, closure of the container is completed by heat sealing open seam areas with the package still in the chamber, and thereafter the sealed completed package is removed from the chamber. In some instances, the container may be filled with an inert gas such as nitrogen or carbon dioxide before it is completely sealed. The containers of this invention are used with seams formed at the marginal edge portions that contain the support members and the remaining end portions open. When a commodity is inserted in the container, the end portions can be initially open and then sealed in the vacuum chamber or the ends can be partially sealed with a heat seal that does not extend entirely across the end portion so as to leave a passageway for the escape of air to be evacuated

from the package and the passageway sealed after the air is removed. One of the advantages of the containers of this invention is that the support members and the marginal portions reinforce or stiffen the container to minimize or eliminate distortion of the package such as commonly occurs with prior art containers typically used in vacuum packaging by reason of the pressure differential to which such packages are often subjected.

The following are set forth as specific examples of containers and pouches made in accordance with this invention.

Example 1

Pouches were made as illustrated in FIG. 1 using a sheet of 50 gauge Mylar polyester film with a 2 mil layer of polypropylene for each side wall of the containers. The pouch was rectangular and two opposed marginal seam areas each carried a strip of polypropylene 6 mils thick heat sealed between the two walls of the panel of the pouch as support members. Other pouches of the same material were made with 10-mil thick strips of polyethylene as the support members. A third group of pouches of this configuration was also made using 250 K201 cellophane with a 2 mil layer of polyethylene as the sheet material for the side walls and with both 6 mil and 10 mil thick strips of polyethylene as the support members. A fourth group of containers of this construction was made using a three-ply sheet material consisting of 50 gauge Mylar polyester film, .00035 aluminum foil, and 2 mils of polypropylene, with the aluminum foil as the middle layer. Support members for the containers were 10 mils thick and comprised a blend of 80% polyethylene and 20% polypropylene.

Example 2

Containers were made as shown in FIGS. 4 and 5 using two-ply sheet material comprising a layer of 250 K201 cellophane and a 2 mil layer of low density polyethylene. Each support member was a strip of polyethylene 25 mils thick and the marginal heat seal seams extended on both sides of the support members as illustrated in the drawings.

In each of the foregoing examples, the containers of this invention exhibited greater resistance to bending or distortion across the reinforced edges than pouches of the same side wall material but without the support members. As indicated, the containers may be made of any suitable flexible packaging material including single layer or monofilm, two-layer films, three-layer films, etc. If the material is not inherently thermoplastic and heat sealable, a suitable heat sealable coating may be applied to one or more surfaces of the material.

There has thus been provided a container of flexible sheet packaging material that includes a pair of superposed sheets that form the side walls of the container and, combined therewith, support members interposed between some of the marginal edge portions of the two sheets. Each support member has a pair of opposed surfaces and one surface is joined to a marginal portion of one sheet and the other surface joined to a marginal portion of the other sheet. Preferably, heat sealable material is used for the sheets and the support members so that the joinder of the sheets to the support members and to each other may be accomplished by heat sealing. Where two support members are used, one disposed in each of two opposite marginal areas of the containers, the two sheets and two support members define a commodity-receiving cavity in which the commodity to be packaged in the container is placed. The support members are thick enough and of suitable material as to be semi-rigid to reinforce the edges of the containers. Preferably, the thickness of the support member is at least from 2 to about 15 times the thickness of the sheet material used to form a container in order to lend the requisite support to the finished container. Containers or pouches of this construction can be used to form hermet-

ically sealed containers that can be used to package both edible and non-edible commodities; a particularly useful application is in the packaging of meats, cold cuts, etc. by vacuum techniques. The containers of this invention can provide a finished package that has a lessened degree of distortion and deformation as compared to prior art containers not utilizing the reinforcing structure of this invention. It is to be understood that it is intended to cover all changes and modifications of the examples of this invention herein chosen for the purposes of illustration which do not constitute a departure from the spirit and scope of this invention.

We claim:

1. A commodity container comprising, in combination:
 - (1) two superposed sheets of flexible packaging material;
 - (2) a first semi-rigid support member disposed in a first marginal area between the two sheets, said support member including a first surface in contact with one of the sheets and a second surface in contact with the other sheet, and a second semi-rigid support member disposed in a second marginal area between the two sheets and including a first surface in contact with one of the sheets and a second surface in contact with the other sheet, said sheets and support members being arranged to define a commodity-receiving cavity therebetween; and
 - (3) seams joining the contacting marginal portions of each sheet to said first and second surfaces of the support members to provide a container including semi-rigid support members in said first and second marginal areas, and there being at least one other marginal area between the two sheets which is unseamed to provide an opening for introducing commodity into the commodity-receiving cavity.
2. A commodity container comprising, in combination:
 - (1) two superposed sheets of heat sealable flexible packaging material;
 - (2) a first semi-rigid support member disposed in a first marginal area between the two sheets, and support member including a first surface in contact with one of the sheets and a second surface in contact with the other sheet, a second semi-rigid support member disposed in a second marginal area between the two sheets and including a first surface in contact with one of the sheets and a second surface in contact with the other sheet, each support member further including an inner edge joining its first and second surfaces and said sheets and support members being arranged to define a commodity-receiving cavity therebetween; and
 - (3) heat seal seams joining the contacting marginal portions of each sheet to said first and second surfaces of the support members to provide a container including semi-rigid support members in said first and second marginal areas, and there being at least one other marginal area between the two sheets which is unseamed to provide an opening for introducing commodity into the commodity-receiving cavity.
3. A container in accordance with claim 2 wherein each support member is at least 2 to 15 times as thick as the thickness of the flexible packaging material.
4. A container in accordance with claim 2 wherein the first and second surfaces of the support members meet along the inner edge of the support members.
5. A commodity container comprising, in combination:
 - (1) two superposed sheets of heat sealable flexible packaging material;
 - (2) a first semi-rigid support member disposed in a first marginal area between the two sheets, said sup-

- port member including a first surface in contact with one of the sheets and a second surface in contact with the other sheet, and a second semi-rigid support member disposed in a second marginal area between the two sheets and including a first surface in contact with one of the sheets and a second surface in contact with the other sheet, each support member further including an inner edge joining its first and second surfaces and said sheets and support members being arranged to define a commodity-receiving cavity therebetween;
 - (3) portions of said sheets further contacting each other alongside the inner edge of each support member; and
 - (4) heat seal seams joining the contacting marginal portions of each sheet to said first and second surfaces of the support members and heat seal seams joining said contacting portions of said sheets alongside the inner edge of each support member, to provide a container including semi-rigid support members in said first and second marginal areas, and there being at least one other marginal area between the two sheets which is unseamed to provide an opening for introducing commodity into the commodity-receiving cavity.
6. A commodity container comprising, in combination:
 - (1) two superposed sheets of heat sealable flexible packaging material;
 - (2) a first semi-rigid support member disposed in a first marginal area between the two sheets, said support member including a first surface in contact with one of the sheets and a second surface in contact with the other sheet, and a second semi-rigid support member disposed in a second marginal area between the two sheets and including a first surface in contact with one of the sheets and a second surface in contact with the other sheet, each support member further including an inner edge joining its first and second surfaces and said sheets and support members being arranged to define a commodity-receiving cavity therebetween; and
 - (3) first portions of said sheets contacting each other alongside the inner edge of each support member and second portions of said sheets contacting each other alongside the outer edge of each support member; and
 - (4) heat seal seams joining the contacting marginal portions of each sheet to said first and second surfaces of the support members and heat seal seams joining said first and second contacting portions of said sheets alongside the inner and outer edges of each support member, to provide a container including semi-rigid support members in said first and second marginal areas, and there being at least one other marginal area between the two sheets which is unseamed to provide an opening for introducing commodity into the commodity-receiving cavity.

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GEORGE O. RALSTON, *Primary Examiner.*
FRANKLIN T. GARRETT, *Examiner.*