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(54) **METHOD OF FORMING A SEALED CONTAINER HAVING A SEALING SHEET MATERIAL AND A RECLOSABLE LID, WHEREIN THE LID PROJECTS INTO A RECESSED PORTION OF THE SHEET MATERIAL**

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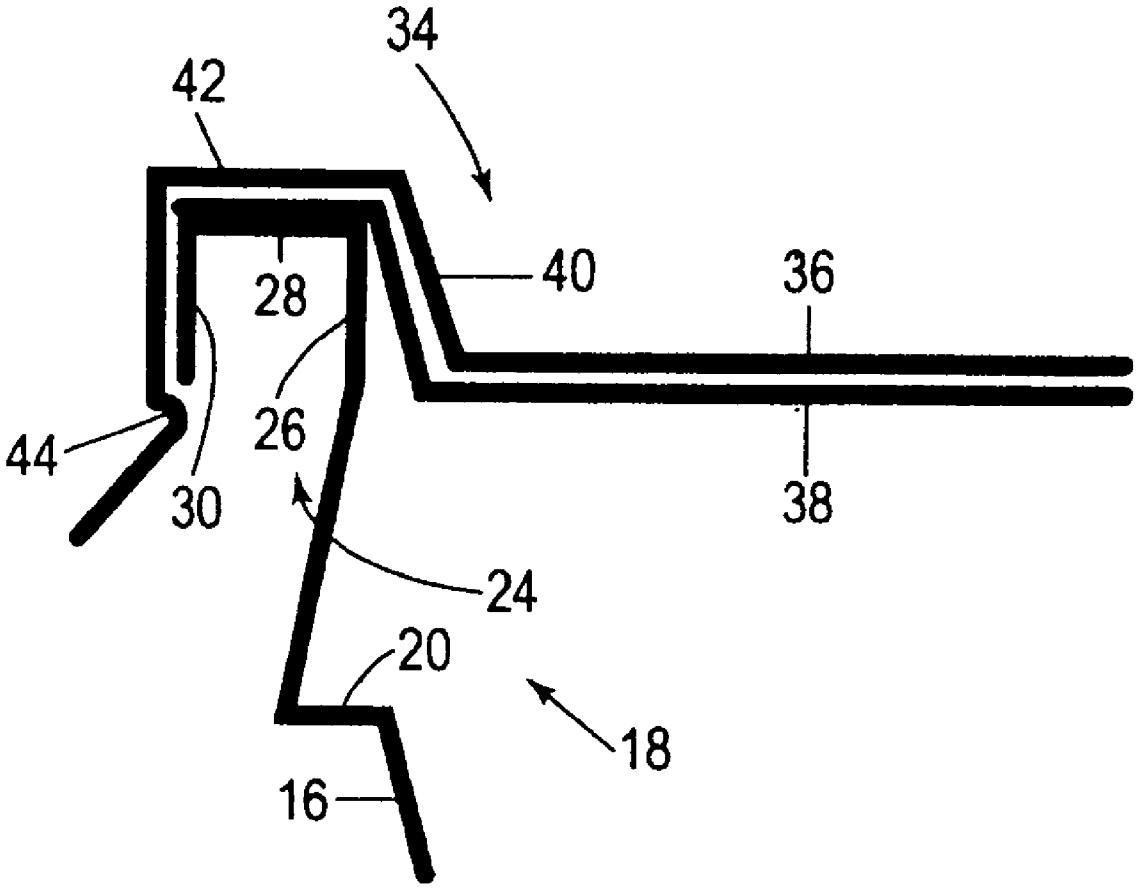
(57) **ABSTRACT**

A reclosable container includes a container having an opening defined by a rim, a reclosable lid having a rim-engaging portion and a recessed portion inwardly of the rim-engaging portion, and a sealing sheet material separate from the lid, the sealing sheet material extending across the opening and being removably secured to the container rim beneath the lid, wherein the recessed portion of the lid projects into the container opening and the sealing sheet material has a recessed portion which accommodates the recessed portion of the lid.



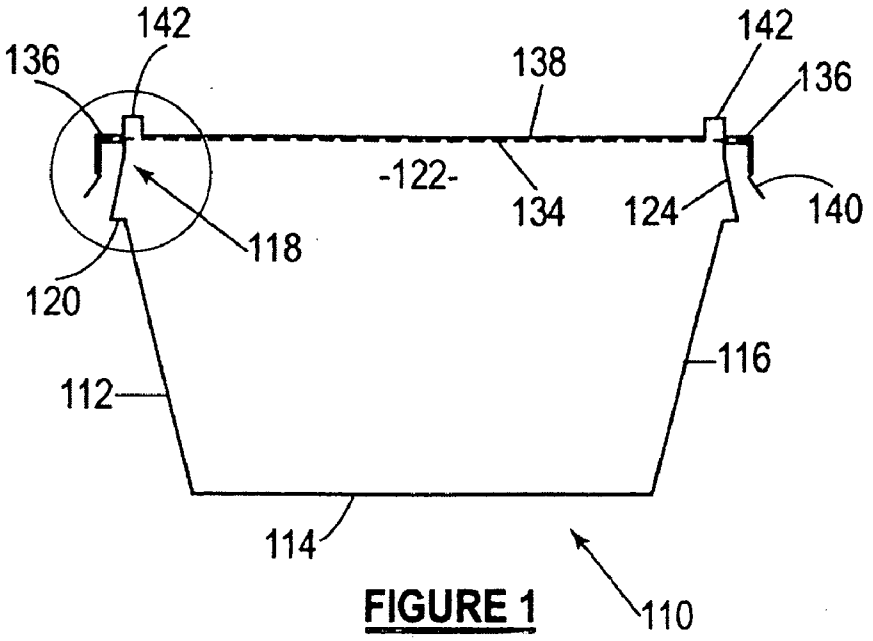


FIGURE 1

PRIOR ART

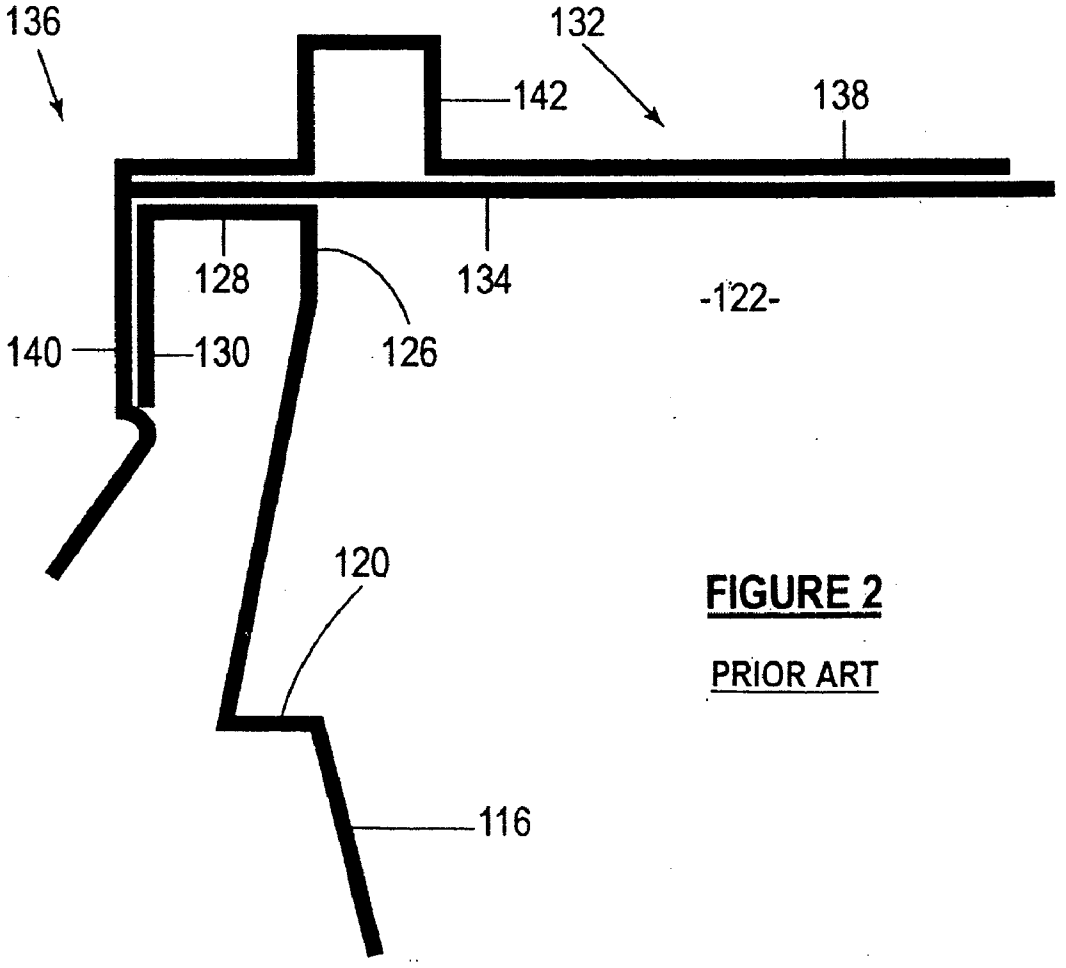


FIGURE 2

PRIOR ART

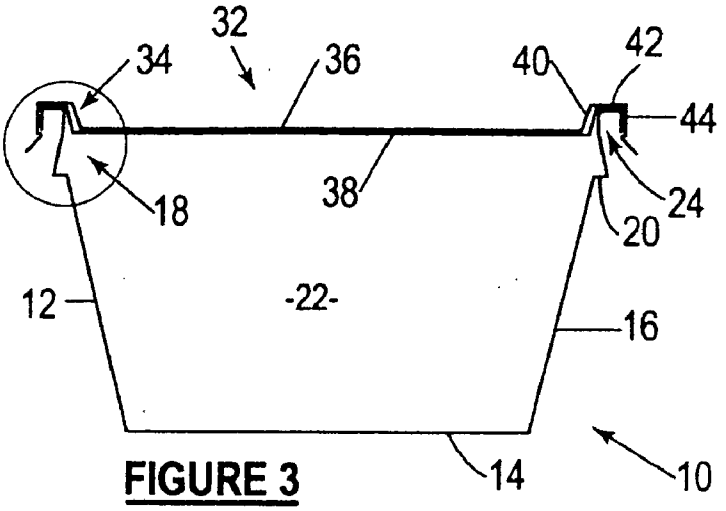


FIGURE 3

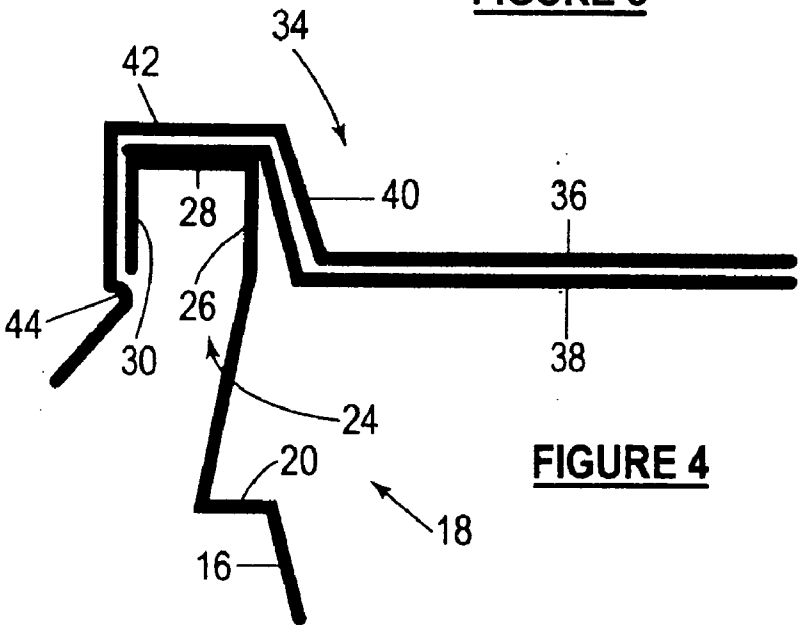


FIGURE 4

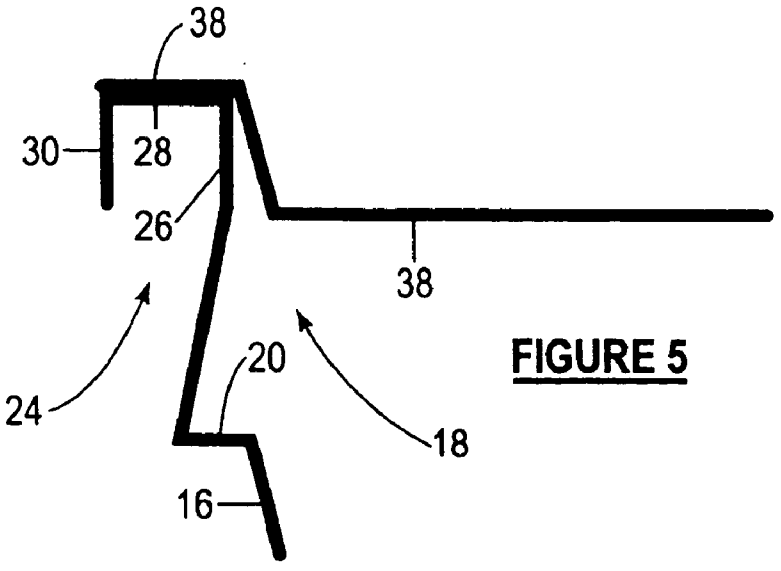


FIGURE 5

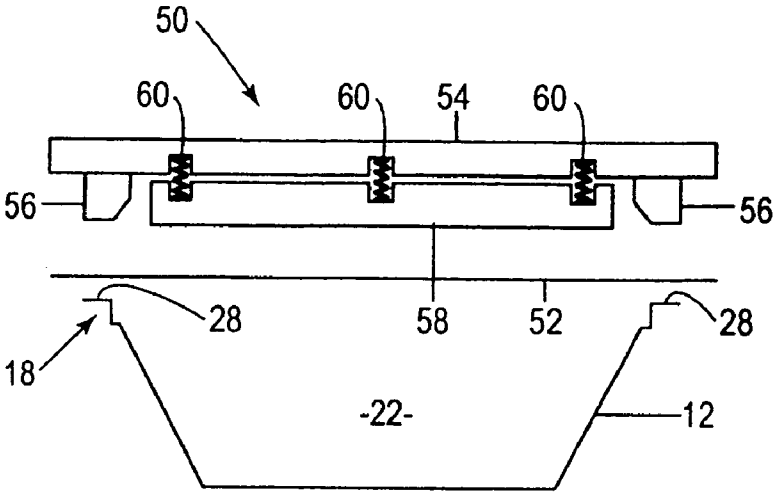


FIGURE 6a

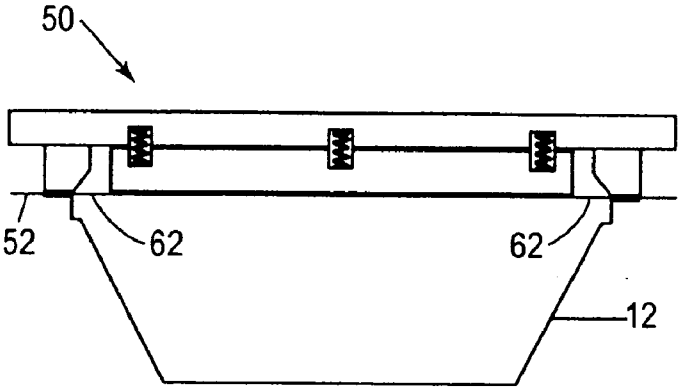


FIGURE 6b

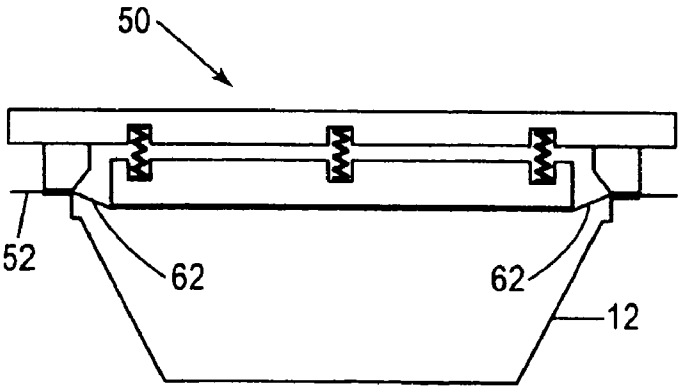


FIGURE 6c

FIGURE 6

METHOD OF FORMING A SEALED CONTAINER HAVING A SEALING SHEET MATERIAL AND A RECLOSABLE LID, WHEREIN THE LID PROJECTS INTO A RECESSED PORTION OF THE SHEET MATERIAL

BACKGROUND OF THE INVENTION

[0001] The present invention relates to the field of containers, particularly reclosable containers, that is containers having a lid, and to a method of forming a sealed container package.

[0002] Reclosable containers are desirable for a variety of reasons. For example, the contents may be subject to contamination, or spillage, if a container is not reclosed after first being opened.

[0003] Conventional containers with lids which can be opened and reclosed are not usually airtight, in which case they will not possess any sealing properties. Many products require a sealed environment prior to first being opened, not only to alleviate the risk of oxidation prior to the product being sold, but also to resist other contamination. Such products are commonly sold in containers with a sheet of film or foil sealed across the opening. If such products are unlikely to all be consumed immediately following removal of the sealing sheet material, a reclosable lid is commonly supplied with the container.

[0004] Many different forms of sealed reclosable containers have been proposed. By way of example, AU 58499/80 proposes a lid for a container comprising a panel of sheet material for covering the container opening, and a moulded plastic rim for engaging the rim of the container, the sheet material being bonded to the plastic rim of the lid during an injection moulding process in which the plastic rim is formed. The sheet material is a laminate and the bottom layer is sealed to the container rim when the lid is fitted to the container. Subsequently, when the lid is removed, the bottom layer separates from the remainder of the sheet material and remains bonded to the container. The bottom layer can be ruptured, peeled or cut away, for access to the contents. However, the lid can then be replaced to give protection to any remaining contents.

[0005] In this proposal, the formation of a specially adapted lid as well as the requirement of a panel of sheet material in laminate form adds complexity and cost to the manufacture of the container.

[0006] A sealed container is also disclosed in AU 63912/90. This disclosure addresses the problem of bonding the sealing sheet material to a narrow cylindrical upper edge of a container. This problem is overcome by bonding the sealing sheet material not only to the upper edge but also to an annular inner surface of the container rim which is inclined downwardly and inwardly, thereby increasing the bonded surface area and allowing for tolerances in the diameter of the container rim. It is further proposed that a container closed in such a way can additionally be covered with a reclosable cover.

[0007] Thermoformed or thin-walled injection moulded lids for containers such as the well known thermoformed or thin-walled containers used, for example, for butter or margarine commonly are shaped to increase the strength and/or flexibility of the lid at the container rim-engaging portion. Generally, this shaping involves recessing the central or inner portion of the lid so that when the lid is engaged with the container rim the recessed inner portion projects into the container opening. The recessed inner portion of the lid is connected to an inner wall of the rim-engaging portion which increases the flexibility of the rim-engaging portion and the overall strength of the lid.

[0008] Containers of the type described in the immediately preceding paragraph have been sealed with a sealing sheet material that is bonded to the upper edge of the container rim and extends in a planar manner across the container opening. Since such a sealing sheet material interferes with a lid of the type described in the immediately preceding paragraph, a different lid has been used. This lid is modified by forming the material of the lid into an annular inverted channel in the rim engaging portion which channel overlies the container rim. The inner portion of the lid extends from the bottom of an inner wall of the inverted channel across the container opening at the level of the upper edge of the container rim and overlies the sealing sheet material.

[0009] One such prior art sealed container and lid assembly **110** is illustrated in **FIGS. 1 and 2**. A conventional container **112** has a base **114** and continuous side wall **116** upstanding from the base. Adjacent the rim **118** of the container, the sidewall has an annular reinforcing flange **120**. The rim **118**, which defines the container opening **122**, is in the form of an inverted channel **124** an inner wall **126** of which projects upwardly from the reinforcing flange **120**. An annular base **128** of the inverted channel extends outwardly from the inner wall **126**, generally transversely to the axis of the container, and an annular skirt **130** depends from the outer edge of the base **128**. Such a container is of thin-walled plastics and is formed by injection moulding or thermoforming.

[0010] The lid **132** of the assembly **110** is modified from a conventional lid (illustrated in **FIGS. 3 and 5**) to accommodate a planar sealing sheet material **134** extending across the container opening **122** and bonded to the base **128** of the inverted channel **124** defining the container rim. The lid **132** has a container rim engaging portion **136** and a planar inner or central portion **138** which overlies the sealing sheet material **134**. The rim engaging portion **136** includes an annular skirt **140** which cooperates with the depending skirt **130** of the container rim by snap engagement to hold the lid on the container **112**.

[0011] Between the annular skirt **140** and the inner portion **138** of the lid, the rim engaging portion **136** includes an annular inverted channel portion **142** which substantially overlies and projects up from the base **128** of the container rim when the lid is engaged with the container. The lid **132** is thermoformed or injection moulded in thin-walled plastics material and the inverted channel portion **142** increases the overall rigidity of the lid while enhancing the flexibility of the annular skirt. The inverted channel portion also defines with the inner portion **138** a recess capable of receiving the base **114** of another container **112** so as to facilitate stacking of the container and lid assemblies **110**.

SUMMARY OF THE INVENTION

[0012] According to the present invention there is provided a reclosable container comprising:

[0013] a container having an opening defined by a rim;

[0014] a reclosable lid having a rim-engaging portion and a recessed portion inwardly of the rim-engaging portion; and

[0015] sealing sheet material separate from the lid, the sealing sheet material extending across the opening and being removably secured to the container rim beneath the lid; wherein the recessed portion of the lid projects into the container opening and the sealing sheet material has a recessed portion which accommodates the recessed portion of the lid.

[0016] By the present invention, the cost and other disadvantages of providing a different lid when it is desired to provide sealing sheet material across a container opening are alleviated.

[0017] The lid is therefore preferably essentially conventional, wherein the rim-engaging portion of the lid has an inverted channel-shaped cross-section with an annular base which overlies the container rim, an outer skirt depending from the base outwardly of the container and an inner wall depending from the base within the container opening, with the recessed portion of the lid extending from a distal edge of the inner wall. The outer skirt of the lid will generally make an interference fit with the rim to engage the lid with the container, for example by screw-threaded engagement or, preferably, snap engagement. The base of the rim engaging portion of the lid preferably overlies the container rim adjacent thereto with the sealing sheet material therebetween.

[0018] The lid is preferably thermoformed or injection moulded, advantageously with a thin-walled construction. By thin-walled as used throughout this specification is meant a wall thickness of no greater than about 1 mm, more preferably between 0.2 and 0.6 mm. The lid may be of any suitable plastics material, whether in mono- or multilayer form, selected for example from one or more of PET, polypropylene (PP), high impact polystyrene (HIPS), all types of polyethylene (PE), nylon and, in a multilayer structure, ethylene/vinyl acetate (EVA). In a preferred embodiment, the lid is thermoformed in PP.

[0019] The container may also be essentially conventional, for example a thermoformed or injection moulded container, particularly an injection moulded thin walled container formed from, for example, any of the materials mentioned above for the lid, whether with a mono- or multi-layer structure. The container may have a circular, oval or any other desired cross-section.

[0020] In a preferred embodiment the rim of the container comprises an upper end face supported at an inner edge by a wall of the container and a skirt depending from the upper end face. Generally the lid will cooperate with the skirt of the container rim to removably engage the lid with the container. Preferably, the upper end face of the rim extends substantially transversely to the axis of the container.

[0021] Depending upon the material of the sealing sheet material and of the container, the sealing sheet material may be heat sealed and/or adhesively engaged with the container rim, preferably with an upper end face of the container rim. Possible materials for the sealing sheet material include a metal foil such as aluminium, a polymer/metal laminate, a polymer film and a multi-layer polymer film. Suitable polymer films include polyethylene terephthalate (PET), nylon, polypropylene, polyethylene in any of its forms such as LDPE, LLDPE and HDPE, and polystyrene alone or in a variety of multilayer combinations. Many different types of multi-layer polymer films are known and may be suitable depending upon the container contents, the gas permeability and other desired characteristics of the film, the method of forming the recessed portion in the sealing sheet material and the method of bonding the sealing sheet material to the container rim. A simple multi-layer structure might be PET with a sealant layer of modified EVA. If it were desired to print the sealing sheet material a top layer of PE may be provided, bonded to the PET with an adhesive such as EVA.

[0022] A polymeric film may incorporate desirable additives such as oxygen scavenging materials.

[0023] Further according to the present invention, there is provided a method of forming a sealed container package which comprises providing a container having a container opening defined by a rim of the container;

[0024] providing a sealing sheet material across the container opening and removably securing the sealing sheet material to the container rim;

[0025] forming a recessed portion in the sealing sheet material whereby at least after the sealing sheet material has been secured to the container rim the recessed portion projects into the container opening; and

[0026] attaching a reclosable lid to the container rim, the lid projecting into the recessed portion of the sealing sheet material within the container opening.

[0027] Also depending upon the material of the sealing sheet material, the recessed portion in the sealing sheet material may be cold-formed, for example by deep drawing, or thermoformed. Thermoforming may be carried out with a vacuum or fluid pressure, but preferably a former is engaged with the sealing sheet material to form the recessed portion therein. The sealing sheet material, or part of it, may be heated before, at the same time as and/or after the former is engaged with the sealing sheet material.

[0028] The recessed portion in the sealing sheet material need be substantially no deeper than the recessed inner portion of the lid. The recessed portion of the sealing sheet material may be at least partly formed before the sealing sheet material is secured to the container rim; for example, it may be preformed, that is before the sealing sheet material is provided across the container opening. However, preferably the recessed portion of the sealing sheet material is formed at the same time as and/or after the sealing sheet material is secured to the container rim.

[0029] Most preferably, the recessed portion of the sealing sheet material is formed after the sealing sheet material has been secured to the container rim, at least to the extent that the sealing sheet material is not drawn across the container rim as the recessed portion is formed. This is especially advantageous in a forming station in which multiple lines of

containers are having the sealing sheet material secured thereto and the recessed portions formed simultaneously from a single sheet of the sealing sheet material, since it alleviates puckering caused when sealing sheet material is drawn across or from one container rim as the recessed portion is formed in the sealing sheet material on an adjacent container.

[0030] In a preferred embodiment, the sheet sealing material is a thermoformable film or foil and the action of heating the film for the thermoforming procedure also initiates securing of the film to the container rim. For a polymeric film, the heating of the film may soften it such that it can be heat sealed to the container rim or to a surface layer on the container rim. Alternatively, the heating may activate an adhesive or sealing layer on the sheet sealing material. Polyethylenes and modified EVAs are examples of adhesives or sealing materials which may have a similar sealing temperature range as the thermoforming temperature range of at least one of PET, polypropylene, nylon and polystyrene.

[0031] The thermoformable film or foil may be heated by contact heaters, induction, infra red, hot air or any other commonly used heating method. In the aforementioned preferred embodiment, the thermoformable film or foil is advantageously heated for the thermoforming process by means for holding the sealing sheet material on the container rim as it is bonded thereto.

[0032] The sheet sealing material may be cut or otherwise shaped to the desired size at any time, prior to, during or after it is secured to the container rim. In the preferred embodiment it is cut after being secured to the container rim.

BRIEF DESCRIPTION OF THE DRAWINGS

[0033] One embodiment of a reclosable container and a method of forming same in accordance with the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

[0034] **FIG. 1** is a cross-sectional view of a prior art sealed container and lid assembly;

[0035] **FIG. 2** is an enlargement of the circled portion of **FIG. 1**;

[0036] **FIG. 3** is a cross-sectional view similar to that of **FIG. 1** but of a reclosable container in accordance with the invention;

[0037] **FIG. 4** is an enlargement of the circled portion of **FIG. 3**;

[0038] **FIG. 5** is a view similar to **FIG. 4** but with the container lid omitted; and

[0039] **FIGS. 6A** to C show three successive stages of one method of forming the sealed container, without the lid, of FIGS. **3** to **5**.

DETAILED DESCRIPTION OF THE INVENTION

[0040] Referring to FIGS. **3** to **5**, the sealed container and lid assembly **10** has a conventional thin-walled injection moulded or thermoformed container **12** which is identical to the container **112** described with reference to **FIGS. 1 and 2**. For convenience only, the container **12** will not be described again in detail and any subsequent reference to its component parts will be followed by a reference numeral corresponding to the reference numeral given to the same part of the container **112** but at one order of magnitude less (e.g., the base of the container **12** is designated by reference numeral **14** instead of **114** as in **FIG. 1**).

[0041] The lid **32** of the assembly **10** is also a conventional thermoformed or injection moulded thin-walled lid, but is of a type which hitherto has only been used with a container **12** without sealing sheet material extending across the container opening **22** and bonded to the container rim **18**. The lid **32** has a container rim-engaging portion **34** and a central or inner portion **36** which is recessed and which, with reference to **FIGS. 1 and 2**, would interfere with the planar sealing sheet material **134** extending across the container opening **122**. However, in accordance with the present invention, the lid **32** can be used because a sealing sheet material **38** extending across the container opening **22** and bonded to the container rim **18** is recessed from adjacent the container rim and projects into the container opening to accommodate the recessed portion **36** of the lid.

[0042] The rim-engaging portion **34** of the lid **32** also has an inverted channel-shaped cross section with a generally upright inner wall **40** from the lower edge of which the recessed inner portion **36** of the lid extends. A base **42** of the inverted channel extends from the upper edge of the inner wall **40** and closely overlies the base **28** of the container rim **18** with the sealing sheet material **38** bonded to the container rim therebetween. An annular skirt **44** depends from the outer edge of the base **42** of the rim-engaging portion **34** to cooperate by snap engagement with the annular skirt **30** of the container rim to remove and engage the lid **32** with the container **12**.

[0043] Comparing the engaged lid **32** illustrated in **FIGS. 3 and 4** with the lid **132** of **FIGS. 1 and 2**, it may be seen that the engaged lid **32** does not project upwardly substantially above the container and that the recessed inner portion **36** is within the container opening **22** so that a stack of container and lid assemblies **10** have a reduced height compared to the same number of stacked container and lid assemblies **110** using an identical container **112**. One method of forming the recessed sealing sheet material **38**, which permits the use of the recessed lid **32**, is described with reference to **FIGS. 6***a* to *c*.

[0044] In **FIG. 6***a*, the container **12** having the desired contents (not shown) therein is disposed at a sealing and thermoforming station **50** with a thermoformable sheet **52** which will form the recessed sealing sheet material **38** supported across the opening **22** of the container. The sheet **52** may be supported between a supply roll and a take-up roll (not shown), or it may be pre-cut substantially to size in which case it may be supported between spaced grippers (not shown). In any event, the sheet **52** overlies the base **28** of the container rim **18** around the full periphery of the container.

[0045] Supported above the container **12** and sheet **52** in the sealing and thermoforming station **50** is a sealing and thermoforming platten **54** which is advanceable towards and withdrawable away from the container by any of a variety of known arrangements (not shown) including pneumatically hydraulically or by means of a servo motor. The platten **54** supports an annular sealing bar **56** on its underside. The

shape of the annular sealing bar corresponds to that of the base **28** of the container rim **18** and the sealing bar **56** overlies the rim **18** so as to press the sheet **52** onto the upper face of the base **28** when the platten **54** is advanced.

[**0046**] Also supported from the underside of the platten **54**, within the annular sealing bar **56**, is a thermoforming plug **58**. The plug **58** is shown suspended from the platten **54** by means of a plurality of springs **60**, but these schematically represent any suitable means for permitting the plug **58** to be advanced away from and withdrawn towards the platten. Such means may comprise one or more springs, pneumatic or hydraulic means or a servo motor device.

[**0047**] As shown, in a rest state illustrated in **FIG. 6***a*, the plug **58** is advanced way from the platten **54** so as to project beneath the annular sealing bar **56**. Thus, as the platten **54** is advanced the plug **58** engages the sheet **52** before the sealing bar **56**. However, at least once the sheet **52** is supported on the rim **18**, the tension in the sheet will overcome the bias in the springs **60** and the plug **58** will withdraw towards the platten **54**, permitting the sealing bar **56** to press the sheet material **52** onto the rim **18** as the platten **54** is advanced further.

[**0048**] The sealing bar **56** is heated so as to effect the bonding of the sheet **52** onto the rim **18** when they are pressed together. Bonding may be achieved by the material of sheet **52** and of the container rim **18** being compatible so that the two materials fuse when they are heated. In a multilayer film **52**, only a lowermost sealing layer need have this compatibility. Alternatively, a heat activated adhesive layer may be applied to one or both of the lower surface of the sheet **52** and the upper face of the base **28** of the container rim. This stage of the sealing and thermoforming process is shown in **FIG. 6***b*.

[**0049**] The heated sealing bar **56** also causes the annular portion **62** of sheet **52** between the plug **58** and the container rim **18** and sealing bar **56** to soften. As soon as softening of the material in portion **62** is sufficient, the bias in the springs **60** urging the plug **58** to advance away from the platten **54** stretches the annular portion **62** and causes the recess in the sheet material **52** to be formed. As soon as the plug has fully advanced, the platten **54** is withdrawn leaving the sheet material **52** bonded to the container rim with a thermoformed recess in the sheet material. Advantageously, the portion of the sheet **52** inwardly of the annular portion **62** is not stretch during the thermoforming process. However, if this is desired the plug **58** may also be heated.

[**0050**] The forming of the recess in the sheet **52** is illustrated schematically in **FIG. 6***c*. As will be appreciated from FIGS. **3** to **5** the recess must be of sufficient depth and cross-section to accommodate the lid **32**. It is also to be noted that the container **12** is illustrated schematically in **FIG. 6**, particularly in that the depending skirt **30** is omitted.

[**0051**] As alternatives to the described processes, the plug **58** may be rigidly supported by the platten **54**, in which case the annular sealing bar **56** should be advanceable and withdrawable relative to the platten. In such an arrangement, the sealing bar would be initially advanced relative to the plug **58** and would initially press the sheet **52** onto the container rim **18** before the plug **58** engages the sheet **52**. As the platten **54** is advanced further to form the recess in the sheet, the sealing bar must withdraw relative to the platten. Alternatively, in a similar arrangement, the sealing bar **56** may be fixed and the plug **58** relatively adjustable, but the plug **58** is withdrawn initially so that the sealing bar engages the sheet **52** first. These alternatives may be useful when the sheet **52** is at least substantially pre-cut and not supported, or not adequately supported, at its periphery.

[**0052**] The final cutting, if necessary, of the thermoformed sheet **52** may be effected by the sealing bar **56**, by separate means (not shown) at the sealing and thermoforming station **50** or at a separate station. Cutting of the sheet may be performed by any industry standard such as a hot or cold steel rule knife or forged knife, or a punch and die assembly.

[**0053**] It will be understood that heating of the sheet **52** may be effected by other means than the sealing bar **56**. In a variation the sheet **52** may be bonded to the container rim **18**, and optionally cut, in one station, with the recess being formed in the sheet **52** in a separate station.

[**0054**] A major advantage of the described sealing and thermoforming station is that it may be incorporated as part of a standard container filling-line process, that is filling, sealing and closing, up to 60 containers or more per minute, with other optional procedures being included if desired. For example, if a modified atmosphere packaging process is called for, the ambient air in the head space above the contents in the container **12** may be at least partly replaced by the modified atmosphere as the sheet **52** is bonded to the container rim. Parallel sealing and thermoforming stations may be used in multiple filling lines so that, for example, for four lines up to 240 or more containers may be processed per minute.

[**0055**] Those skilled in the art will appreciate that the invention described herein is susceptible to variations and modifications other than those specifically described. It is to be understood that the invention includes all such variations and modifications which fall within its spirit and scope.

What is claimed is:

1. A reclosable container comprising:

a container having an opening defined by a rim;

a reclosable lid having a rim-engaging portion and a recessed portion inwardly of the rim-engaging portion; and

sealing sheet material separate from the lid, the sealing sheet material extending across the opening and being removably secured to the container rim beneath the lid;

wherein the recessed portion of the lid projects into the container opening and the sealing sheet material has a recessed portion which accommodates the recessed portion of the lid.

2. A reclosable container according to claim 1, wherein the rim-engaging portion of the lid has an inverted channel-shaped cross-section with an annular base which overlies the container rim, an outer skirt depending from the base outwardly of the container and an inner wall depending from the base within the container opening, with the recessed portion of the lid extending from a distal edge of the inner wall.

3. A reclosable container according to claim 2, wherein the outer skirt of the lid makes an interference fit with the container rim to engage the lid with the container.

4. A reclosable container according to claim 2, wherein the base of the inverted channel-shaped rim engaging portion of the lid overlies the container rim adjacent thereto with the sealing sheet material therebetween.

5. A reclosable container according to claim 1, wherein the rim of the container comprises an upper end face supported at an inner edge by a wall of the container and a skirt depending from the upper end face.

6. A reclosable container according to claim 5, wherein the upper end face of the rim extends substantially transversely to the axis of the container.

7. A reclosable container according to claim 6, wherein the sealing sheet material is removably secured to the upper end face of the container rim.

8. A reclosable container according to claim 1, wherein the sealing sheet material is selected from the group comprising a metal foil, a polymer/metal laminate, a polymer film and a multi-layer polymer film.

9. A reclosable container according to claim 1, wherein the sealing sheet material is heat sealed to the container rim.

10. A reclosable container according to claim 1, wherein the sealing sheet material is adhesively engaged with the container rim.

11. A reclosable container according to claim 1, wherein the recessed portion of the sealing sheet material extends from adjacent the container rim.

12. A reclosable container according to claim 1, wherein the recessed portion of the sealing sheet material is formed by cold drawing or by thermoforming the sealing sheet material.

13. A reclosable container according to claim 1, wherein the recessed portion of the sealing sheet material is at least partly formed before the sealing sheet material is secured to the container rim.

14. A reclosable container according to claim 1, wherein the recessed portion of the sealing sheet material is formed at the same time as and/or after the sealing sheet material is secured to the container rim.

15. A reclosable container according to claim 1, wherein the container is a thermoformed or injection moulded plastic container.

16. A reclosable container according to claim 1 wherein the lid is thermoformed or injection moulded.

17. A method of forming a sealed container package which comprises providing a container having a container opening defined by a rim of the container;

providing a sealing sheet material across the container opening and removably securing the sealing sheet material to the container rim;

forming a recessed portion in the sealing sheet material whereby at least after the sealing sheet material has been secured to the container rim the recessed portion projects into the container opening; and

attaching a reclosable lid to the container rim, the lid projecting into the recessed portion of the sealing sheet material within the container opening.

18. A method according to claim 17, wherein the recessed portion is cold formed or thermoformed.

19. A method according to claim 18, wherein the thermoforming is carried out by engaging the sealing sheet material with a former to form the recessed portion in the sealing sheet material.

20. A method according to claim 19, wherein at least part of the sealing sheet material is heated before the former is engaged with the sealing sheet material.

21. A method according to claim 19, wherein at least part of the sealing sheet material is heated at the same time as or after the former is engaged with the sealing sheet material.

22. A method according to claim 17, wherein the recessed portion of the sealing sheet material is at least partly formed before the sealing sheet material is secured to the container rim.

23. A method according to claim 17, wherein the recessed portion of the sealing sheet material is at least partly formed at the same time as or after the sealing sheet material is secured to the container rim.

24. A method according to claim 23, wherein the sealing sheet material is not drawn across the container rim as the recessed portion is formed.

25. A method according to claim 17, wherein the sealing sheet material is a thermoformable film and the action of heating the film for thermoforming also initiates the bonding of the film to the container rim.

26. A method according to claim 25, wherein the thermoformable film is a polymeric film and the heating of the film softens it such that it can be heat sealed to the container rim.

27. A method according to claim 17, wherein the heating of the sealing sheet material activates an adhesive or sealing layer on the sealing sheet material.

28. A method according to claim 17, wherein the sheet sealing material is cut or shaped prior to being secured to the container rim.

29. A method according to claim 17, wherein the sheet sealing material is cut or shaped during and/or after being secured to the container rim.

30. A method according to claim 17, wherein the sealing sheet material is removably secured to an upper end face of the container rim.

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