June 13, 1967 G. H. McCUTCHEON 3,325,044

CAN CLOSURE

Filed July 21, 1965

FIG. 1.

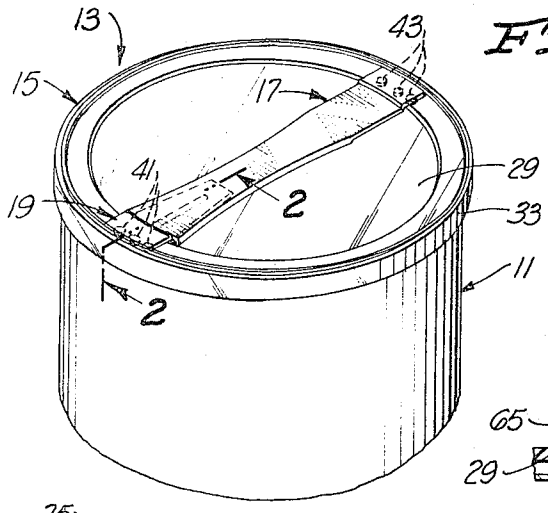


FIG. 3.

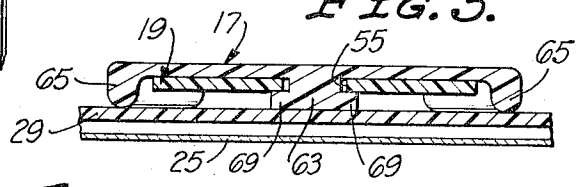


FIG. 2.

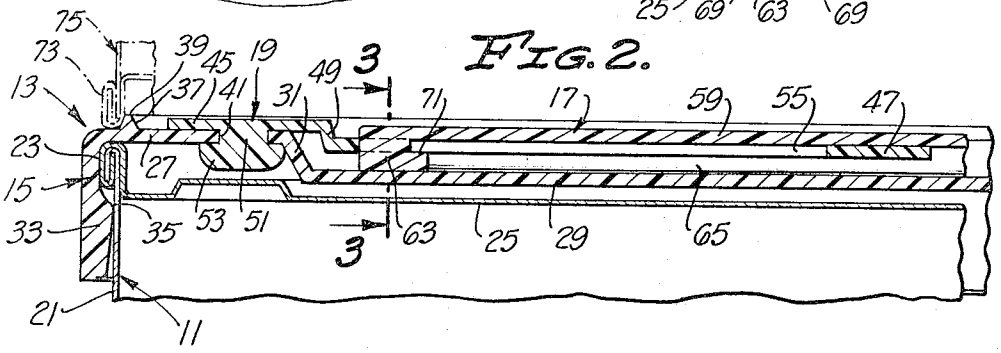


FIG. 4.

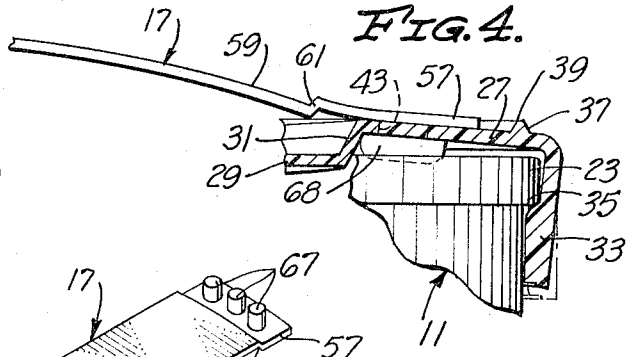


FIG. 5.

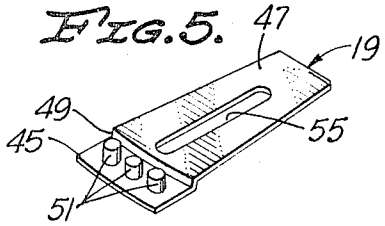
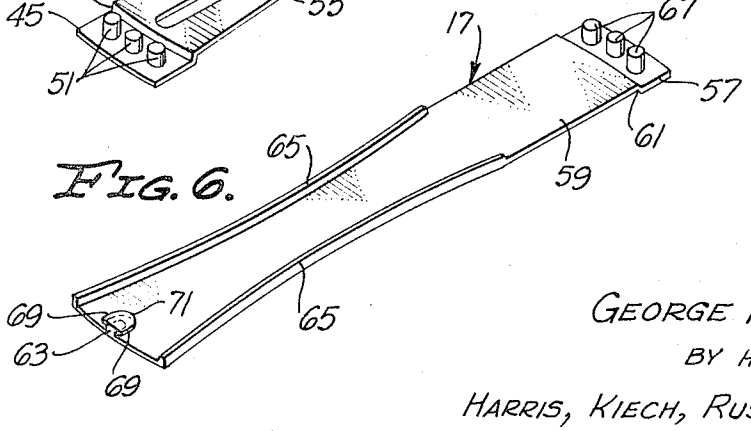


FIG. 6.



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United States Patent Office 3,325,044 Patented June 13, 1967

3,325,044

CAN CLOSURE

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Filed July 21, 1965, Ser. No. 473,576
12 Claims. (Cl. 220—60)

This invention relates to a can closure and more particularly to a deformable can closure having novel handle means for lifting and carrying the can.

Can or container closures of deformable material, e.g. plastic, are frequently supplied with sealed metal food containers such as coffee cans for use after the seal on the can is broken and the metal cover has been removed. The metal covers cannot be reused because they do not form a satisfactory seal with the can once the factory-formed seal has been broken. Beaded plastic closures have been found very satisfactory as they readily form a tight seal with the container and are easily removed therefrom.

An object of this invention is to provide an improved deformable can closure of simple construction which tightly encloses a container and provides novel means for carrying or supporting the container, the carrying means being particularly useful with cans of relatively large diameter.

Another object of this invention is to provide a closure for a container including handle means which closure provides increased resistance to displacement of the closure relative to the container therefor when upward lifting forces are applied to the handle means.

A further object of this invention is to provide a closure for a container having a top bead, the closure including a deformable lid having a top member, a peripheral flange depending from the top member to a position beneath the top bead of the container, and an internal bead extending generally inwardly from the peripheral flange beneath the top bead to resist displacement of the lid relative to the container; and handle means secured to the top member inwardly of the peripheral flange so that application of upward lifting forces to the handle means tends to increase the angle between the top member and the flange, thus tending to force portions of the internal bead inwardly and increase the resistance of the lid to displacement relative to the container.

An object of this invention is to provide a container closure securable to the end of the container which facilitates and does not interfere with end-to-end stacking of the containers and which stabilizes the resulting stack. A further object is to provide a stacking rib extending upwardly from the top member of the lid to facilitate stacking of the containers and to assist in stabilizing the resulting stack, together with a handle structure which when collapsed will be disposed below the top of the stacking rib.

Another object of this invention is to provide a container closure securable to the end of a container and including handle means which does not interfere with end-to-end stacking of the containers. A further object is to provide handle means of such thickness and size as to lie below the plane of the tip of the stacking rib to thereby preclude interference with the stacking operation.

A particular object of this invention is to provide a closure including a lid having a central depression and a shelf portion, together with a two-piece collapsible handle means which overlies and is at least partially receivable in the central depression so as to preclude interference with container stacking and to require a minimum amount of space. According to this object of the invention, the handle means may include a handle member and a tab member both overlying the lid. The handle member has a

mounting portion fixed to the shelf portion at one of two diametrically opposite anchor positions and an end portion extending toward the other of the anchor positions and overlying the central depression in the lid. The tab member may have an outer mounting portion fixed to the shelf at the other of the anchor positions and an inner tongue portion extending from the outer mounting portion toward the center of the lid in alignment with the handle member. The handle member and tab member are slidably interconnected for limited movement, as by a slot in one of the members and a follower member on the other of the members which is receivable by the slot. Another object of this invention is to offset downwardly one or both of the inner tongue portion of the tab member and the end portion of the handle member so that at least one of these members lies within the central depression.

The invention, both as to its organization and method of operation together with further objects and advantages thereof may best be understood by reference to the following description taken in connection with the accompanying drawing in which:

FIG. 1 is a fragmentary perspective view of a can closure and a can with the handle means of the closure being in the collapsed position;

FIG. 2 is an enlarged fragmentary sectional view of one end of the handle means taken along line 2—2 in FIG. 1;

FIG. 3 is a fragmentary sectional view taken along line 3—3 in FIG. 2 and showing the interconnection between the handle member and tab member;

FIG. 4 is a fragmentary view partially in section of the other end of the handle means and illustrates how portions of the internal bead on the lid at either end of the handle means are forced inwardly to increase the resistance to relative displacement between the lid and the container when upward lifting forces are applied to the handle means;

FIG. 5 is an inverted perspective view of the tab member; and

FIG. 6 is an inverted perspective view of the handle member.

FIG. 1 illustrates a cylindrical can or container **11** the upper end of which is closed by a can closure **13**. The can closure **13** includes a lid **15** to which a handle member **17** and a tab member **19** are secured. Preferably, the lid **15**, the handle member **17**, and the tab member **19** are each separately molded from a pliable and deformable plastic material preferably an amorphous polymer such as polyethylene, polypropylene and the like.

The can closure **13** is particularly adapted for use with the container **11**, details of which are illustrated in FIG. 2. The can **11** has a side surface **21** and a top bead **23** protruding outwardly from the side surface **21** at the upper edge of the can. The upper end of the can **11** is usually initially sealed by a cover **25** which may be formed integrally with the upper end of the can or otherwise sealed thereto as by the bead construction shown. The container **11** may be formed of metal and the cover **25** may be removed from the container by a conventional can opener. Once the cover **25** has been removed, it cannot be suitably secured to the can **11**, and accordingly, the lid **15** of the invention is used to seal the upper end of the can to prevent the goods therein from spoiling, losing their flavor, spilling, etc. After the contents of the can have been used, the can and its lid **15** can be used by the housewife for storage.

The lid **15** is a molded thin-walled integral member shaped to conform to the can, being exemplified as generally circular in plan. The lid **15** includes an outer portion shown as including an annular flat shelf portion **27**.

It includes also a downwardly offset flat circular central portion **29** forming a central depression, and a frustoconical section **31** interconnecting the shelf portion and the central portion. The shelf portion **27**, the central portion **29**, and the frustoconical section **31** close the upper end of the container **11** and form a top member of the lid **15**.

The lid **15** also has an annular peripheral flange **33** integral with the shelf portion **27** and extending below the top bead **23** of the can **15**. An internal bead **35** sized to slip over the top bead **23** of the can **11** and seat therebelow extends inwardly from the flange **33**. As shown in FIG. 2, the flange **33** may engage the top bead **23** and form a seal therebetween, particularly at the side of the bead, when the internal bead **35** is seated below the top bead to resist displacement of the lid **15** relative to the can **11**.

An annular stacking rib **37** which may be of triangular or other cross section extends slightly upwardly from the shelf portion **27** closely adjacent the periphery of the lid **15**. The stacking rib **37** has a tip **39** at the upper end thereof which lies in a generally horizontal plane which overlies the top member. For a purpose to be described, the shelf portion **27** is shown as provided with a plurality of apertures **41** at one anchor position and a plurality of openings **43** diametrically opposed to the apertures **41** at a second anchor position. These apertures are preferably formed during the molding of the lid but can be punched if desired.

The handle member **17** and the tab member **19** form handle means for the can closure **13**. Referring to FIGS. 2, 3 and 5, the tab member **19** is preferably an integral member and includes an outer mounting portion **45**, a downwardly offset inner tongue portion **47**, and a shoulder **49** interconnecting the mounting portion and the inner tongue portion. The mounting portion **45** and the inner portion **47** are both generally thin flat strips and the former has a plurality of securing pins **51** depending therefrom and receivable by the apertures **41** in the shelf portion **27**. By heating the ends of the securing pins **51** to about their melting temperature, as by touching a hot iron thereto, a securing knob or head **53** is formed on the end of the pins on the under side of the shelf portion **27** to securely fix the tab member **19** to the lid **15**. Although this method of securing the tab member **19** to the lid **15** is preferred, the lid and tab member could be otherwise fixed together, as by being adhered or molded integrally.

With the tab member **19** secured to the shelf portion **27**, the inner tongue portion extends from the outer mounting portion **45** toward the center of the lid **15** and the opposed anchor position. The inner tongue portion **47**, which is offset downwardly by the shoulder **49**, lies within the depression formed by the central portion **29** of the lid **15**. The tab member **19** is of such thickness and size that no portion thereof extends above the horizontal plane containing the tip **39** of the stacking rib **37** when the tab member **19** is in the collapsed position of FIG. 2.

As shown in FIGS. 1 and 2, the tab member **19** is secured to the shelf portion **27** inwardly of the peripheral flange **33** and a portion of the mounting portion extends outwardly toward the flange **33** from the apertures **41**. A longitudinally extending slot **55** is formed in the inner tongue portion **47** and is utilized to slidably interconnect the handle member **17** and the tab member **19** as more fully described hereinafter.

The handle member **17** has a flat mounting portion **57**, a downwardly offset end portion **59**, a shoulder **61** interconnecting the mounting portion and the end portion, a follower member **63** depending from the end of the end portion **59**, and two arcuate longitudinal edge flanges **65** depending from the longitudinal edges of the end portion throughout most of its length but preferably terminating short of the shoulder **61**. The mounting portion **57** carries

three securing pins **67** which are receivable by the openings **43** and heatable to form securing knobs **68** (FIG. 4) which are similar to the knobs **53** for securing the handle member to the shelf portion **27**. The end portion **59** extends toward the apertures **41** in alignment with the tab member **19** and is offset downwardly into the central depression of the lid with the lower edges of the flanges **65** lying in contact with or close to the top surface of the lid depression. The handle member **17** is of such thickness and size that no portion thereof extends above the horizontal plane containing the tip **39** of the stacking rib **37** when the handle member is in the collapsed position of FIG. 2.

Any suitable means are provided for slidably connecting the end portion **59** and the tongue portion **47** for limited movement therebetween. Such means may include the slot **55** and the follower member **63** which is slidably received thereby. As shown in FIGS. 2 and 3, the handle member **17** overlies the tab member **19** and the follower member **63** extends downwardly through the slot **55** to slide therein. The follower member **63** includes lateral flanges **69** and a rearwardly extending flange **71** for securing the tab member **19** to the handle member **17**.

The edges of the lateral flanges are spaced a distance greater than the width of the slot **55** but can be forced thereinto due to the resiliency or deformability of the materials of which the handle elements are made. Also one or both of the slot-forming side elements of the tab member **19** can be initially spread or displaced from their normal coplanar relation to facilitate receipt of the follower member **63**. The flanges **67** lie in the space between the handle member and the lid surface and prevent disengagement of the elements as the handle means is being extended.

In moving the handle means from the collapsed position to a carrying position, upward forces are applied to the handle member **17**, thereby moving the handle member upwardly (FIG. 4). The follower member causes the tab member to move upwardly with the handle member and the slot **55** allows relative longitudinal movement between the tab and handle members as the handle means is moved to the extended or carrying position. In the carrying position, there is sufficient space between the lid **15** and the handle member **17** to allow the fingers of the carrier to fit therebetween. In the carrying position, the rearwardly directed flange **71** lies beneath and engages a portion of the inner tongue portion **47** adjacent one end of the slot **55** to limit the relative movement and lock the handle and tab members against separation.

The can **11** containing any of a number of products such as coffee may be shipped to the consumer with the can closure **13** as illustrated in FIGS. 1 and 2. The handle means on the lid **15** facilitates carrying of the filled container. The lid **15** may be removed by forcing the internal bead **35** over the top bead **23** of the can **11** to allow a can opener (not shown) to be used to remove the metal cover **25**. The metal cover **25** may then be discarded and the only closure used thereafter on the container **11** is the lid **15**.

An important feature of this invention is that application of upward lifting forces to the handle member **17** tends to force portions of the internal bead **35** inwardly and thus increase the resistance of the lid **15** to displacement relative to the container **11**. Thus, when the filled container **11** is being carried or otherwise supported by the handle member **17**, the lid **15** becomes more securely attached to the can **11**. To bring about this result, it is important that the lid **15** be constructed of deformable material such as plastic and that the handle member **17** and the tab member **19** be secured to the shelf portion **27** inwardly of the peripheral flange **33**. Thus, as illustrated in FIG. 4, lifting or arching of the handle and tab members upwardly deforms the lid **15** slightly and tends to force portions of the internal bead **35** inwardly into

tighter engagement with the can **11** to more securely attach the lid **15** thereto. It is also desirable that the outer portion of the shelf portion **27** be substantially flat and meet the flange **33** at substantially a right angle. Thus, upward arching of the handle member **17** and the tab member **19** tends to increase the angle between the shelf portion and the flange **33** adjacent the securing knobs **53** and **68** which in turn forces the flange **33** inwardly to attach the lid **15** more securely to the container **11**.

Another feature of this invention is the stacking rib **37** which is adapted to engage or fit within a bottom bead **73** (FIG. 2) of a container **75** positioned thereabove. Thus, the stacking rib **37** facilitates stacking and aligning of the containers in end-to-end relationship and stabilizes the stack so formed.

It is also important that no portion of the handle member **17** or the tab member **19** extends above the horizontal plane containing the tip **39** of the stacking rib **37** to interfere with the stacking operation. This is advantageously accomplished by offsetting downwardly the central portion **29** of the lid **15** to form a central depression into which one or both of the inner tongue portion **47** and the end portion **59** may lie. The collapsible feature of the handle means allows the handle members **17** and the tab member **19** to move downwardly into the depression formed by the downwardly offset central portion **29**. The engagement of the bead **65** and the follower member **63** with the central portion **29** stabilizes the elements of the closure **13** in the collapsed position.

Many changes, modifications, and substitutions may be made by one having ordinary skill in the art without necessarily departing from the spirit and scope of this invention.

What is claimed is:

1. A closure for a container having an upper end portion, said closure including:

a deformable lid having a top member and a peripheral flange depending from said top member to secure said lid to the upper end portion of the container;

a handle member overlying said lid, said handle having a mounting portion fixed to said top member at one of two generally opposed anchor positions each located inwardly of said flange, said handle having an end portion extending toward the other of said anchor positions;

a tab member having an outer mounting portion fixed to said top member at said other of said anchor positions and an inner tongue portion extending from said mounting portion toward said handle; and

interlocking means for slidably connecting said end and togue portions of said handle and tab members respectively for limited movement therebetween.

2. A closure for a container having a top bead protruding outwardly from a side surface of the container, said closure including:

a deformable lid having a top member, a peripheral flange depending from said top member to a position beneath said top bead, and an internal bead extending generally inwardly from said peripheral flange beneath said top bead to resist displacement of said lid relative to the container, said top member meeting said flange at a given angle; and

handle means secured to said top member inwardly of said peripheral flange, application of upward lifting forces to said handle means tending to increase said given angle between said top member and said flange thus tending to force portions of said internal bead inwardly and increase the resistance of said lid to displacement relative to the container.

3. A can closure for a can having a top bead protruding outwardly from a side surface of the can, said closure including:

a deformable lid having a top member and a peripheral flange integral therewith depending below said top bead;

a handle member overlying said lid, said handle member having a mounting portion fixed to said top member at one of two generally diametrically opposed anchor positions each located inwardly of said flange, said handle member having an end portion extending toward the other of said anchor positions;

a tab member having an outer mounting portion fixed to said top member at said other of said anchor positions and an inner tongue portion extending from said outer mounting portion toward the central portion of said lid generally in alignment with said handle member; and

means for slidably connecting said end and tongue portions of said handle member and said tab member respectively for limited movement therebetween.

4. A can closure as defined in claim **3** in which said flange has an internal bead sized to slip over said top bead of the can and seat therebelow to resist displacement of said lid relative to the can, said lid having a flat outer portion meeting said flange at substantially a right angle, said mounting portions of said tab member and said handle member being flat portions fixed to said flat outer portion of siad lid at said diametrically opposed anchor positions, whereby upward arching of said handle and said tab member tends to increase the angle between said outer portion and said flange adjacent said anchor positions thus tending to force adjacent portions of said internal bead inwardly and increase the resistance of said lid to displacement relative to the can.

5. A closure as defined in claim **3** including a stacking rib extending upwardly from said top member, said stacking rib having a tip lying in a plane which overlies said top member, said handle member and said tab member being of a thickness to lie below said plane.

6. A closure as defined in claim **3** wherein said lid has a shelf portion and a downwardly offset central portion forming a central depression in which said slidable connecting means is positionable, said mounting portions of said handle member and said tab member being fixed to said shelf portion.

7. A closure as defined in claim **3** wherein said lid has a shelf portion and a downwardly offset central portion forming a central depression in which said slidable connecting means is positionable, said mounting portions of said handle member and said tab member being fixed to said shelf portion and at least one of said handle and tab members being offset downwardly to lie in said central depression.

8. A closure as defined in claim **3** wherein said connecting means includes a slot in one of said handle and tab members and a follower member on the other of said handle and tab members, said follower member being slidable within said slot.

9. A can closure for a can having a top bead protruding outwardly from a side surface of the can, said closure including:

a lid formed of deformable plastic material, said lid having a shelf portion, a peripheral flange integral with said shelf portion and extending below said top bead, a downwardly offset central portion forming a central depression, and a stacking rib extending upwardly from said shelf portion, said stacking rib having a tip lying in a plane which overlies said shelf portion;

a handle member overlying said lid, said handle member having a mounting portion fixed to said shelf portion at one of two diametrically oppose anchor positions, each of said anchor positions being located inwardly of said flange and on said shelf portion, said handle member having an end portion extending toward the other of said anchor positions and over-

lying said downwardly offset central portion of said lid;

a tab member having an outer mounting portion affixed to said shelf at said other of said anchor positions and an inner tongue portion extending from said outer mounting portion toward the center of said lid in alignment with said handle member, said inner tongue portion overlying said downwardly offset central portion of said lid; and

means for slidably connecting said end and tongue portions of said handle and tab members, respectively, for movement between an extended carrying position and a collapsed position in which said handle member and said tab member are adjacent said lid, said handle and tab members being of such thickness and size that no portion thereof extends above said plane when said handle and tab members are in said collapsed position.

10. A closure as defined in claim **9** wherein said end portion of said handle member and said inner tongue portion of said tab member are offset downwardly and are of such thickness and size as to lie within said central depression with no portion thereof extending above said plane when said handle and tab members are in said collapsed position.

11. A can closure for a can having a top bead protruding outwardly from a side surface of the can, said closure including:

a lid of deformable plastic material, said lid having a shelf portion, an annular peripheral flange integral with said shelf portion and extending below said top bead, an internal bead extending inwardly from said flange and sized to slip over the top bead of the can and seat therebelow to resist displacement of said lid relative to the can, a downwardly offset central portion forming a central depression, and a stacking rib extending upwardly from said shelf portion and having a tip lying in a plane which overlies said shelf portion;

a handle member of deformable plastic material overlying said lid, said handle member having a mounting portion and securing pins on said mounting portion, said securing pins being received by and fixed to said shelf portion at one of two diametrically opposite anchor positions, each of said anchor positions being located inwardly of said flange and on said

shelf portion, said handle member having an end portion extending toward the other of said anchor positions, a follower member depending from said end portion, and two longitudinal edge flanges depending from said end portion, said end portion overlying said downwardly offset central portion of said lid; and

a tab member of deformable plastic material, said tab member having an outer mounting portion affixed to said shelf portion at said other of said anchor positions, an inner tongue portion extending from said outer mounting portion toward the center of said lid in alignment with said handle member, and a longitudinal slot in said inner tongue portion for slidably receiving said follower member, said inner tongue portion overlying said downwardly offset central portion of said lid beneath said end portion of said handle member, said follower member being movable in said slot to move said handle and tab members between an extended carrying position and a collapsed position in which said handle and tab members are closely adjacent said lid, said end portion of said handle member and said inner tongue portion of said tab member being offset downwardly into said central depression of said lid and being of such thickness and size that no portion thereof extends above said plane when said tab member is in said collapsed position.

12. A can closure as defined in claim **11** in which said follower member includes a rearwardly extending flange in the plane of said longitudinal edge flanges adapted to lock below the tongue portion of said tab member when said follower member is at the innermost end of said longitudinal slot.

References Cited

UNITED STATES PATENTS

3,269,588	8/1966	Ruekberg	220—97

FOREIGN PATENTS

211,063	2/1924	Great Britain.

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