April 15, 1969 D. R. WALLACE 3,438,530

JAR CLOSURE ASSEMBLY

Filed Sept. 21, 1967

FIG. 1

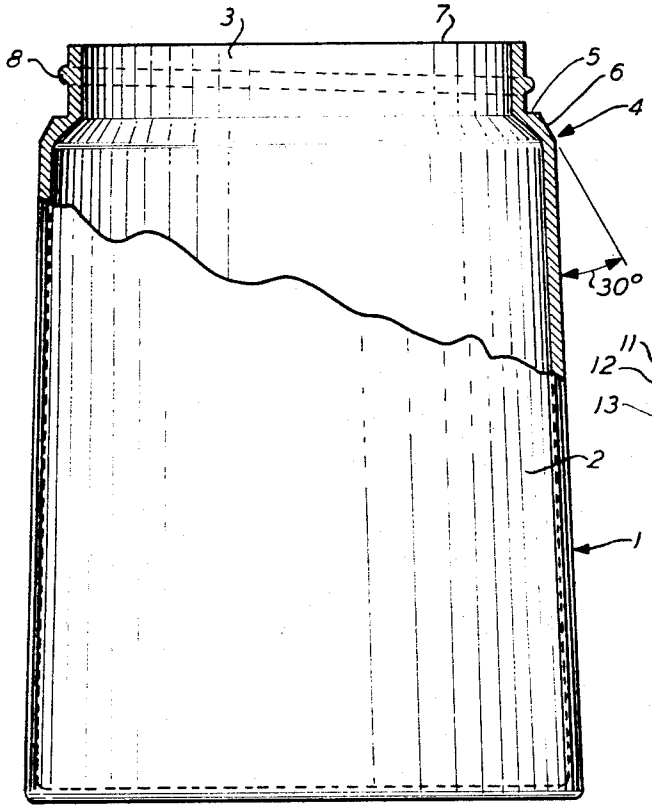


FIG. 4a

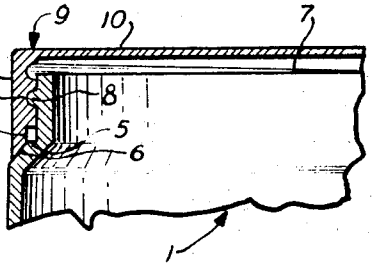


FIG. 4b

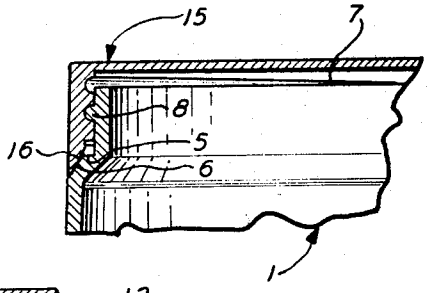


FIG. 2

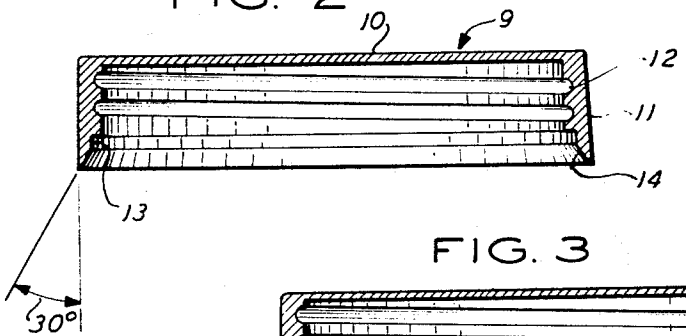
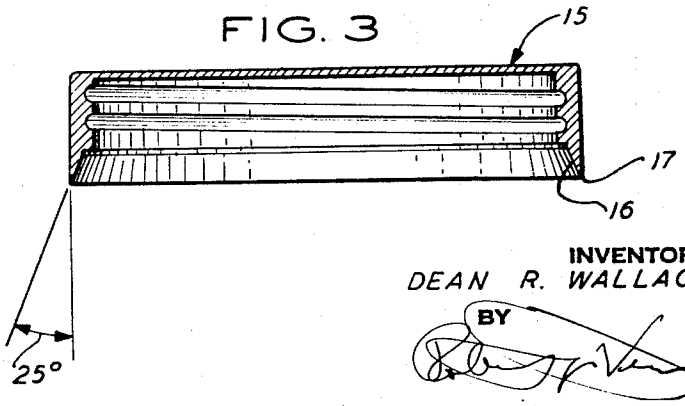


FIG. 3



INVENTOR
DEAN R. WALLACE

BY

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JAR CLOSURE ASSEMBLY

Dean R. Wallace, Madison, Wis., assignor to Air Reduction Company, Incorporated, New York, N.Y., a corporation of New York

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U.S. Cl. 215—43 7 Claims

ABSTRACT OF THE DISCLOSURE

A closure assembly wherein a resilient jar cap is dimensioned so that it can be threaded on a jar neck in air-tight sealed relation thereto without internal abutting contact between the upper rim of the jar neck and the cap. The sealed relation comprises an angular exterior, intermediate surface on the jar joining the jar neck to the jar body, and a substantially complementary angular interior lower edge surface on the cap in pressure contact therewith.

Background of the invention

Threaded closure assemblies of the prior art have generally necessitated additional distinct elements other than cap and jar to provide a sealed relation and are, therefore, time consuming in assembly.

For example, seals have generally been placed between the upper rim of the jar neck and the cap or between the cap lower edge surface and a jar surface.

Other attempts to provide a sealed relation in jar closure assemblies without additional elements have resulted in stripping the threads as the cap is continually turned to provide a tight closure, or have resulted in inadequate sealed relation at points of direct contact between jar and cap.

Summary of the invention

It is a primary object of the present invention to provide a jar closure assembly which is easy to assemble and which provides an air-tight seal between cap and jar.

It is a further object of the present invention to provide a jar closure assembly which utilizes direct contact between cap and jar to provide a sealed relation.

It is also an object of the present invention to provide a threaded relationship between cap and jar such that different degrees of sealed relation such as air-tight, water-tight, etc. can be achieved.

To accomplish the above and other objects, different types of direct contact surfaces are formed between cap and jar by threading the cap on the jar in varying degrees.

The above and other objects, features, and advantages will become apparent when viewed in the light of the following description, claims, and drawings.

Brief description of the drawings

FIGURE 1 is a cross-sectional view of a jar constructed in accordance with the invention;

FIGURE 2 is a cross-sectional view of an embodiment of a cap constructed in accordance with the present invention;

FIGURE 3 is a cross-sectional view of another embodiment of a cap;

FIGURE 4*a* is a partial cross-sectional view of the cap embodiment of FIGURE 2 securely threaded on the jar; and

FIGURE 4*b* is a partial cross-sectional view of the cap embodiment of FIGURE 3 securely threaded on the jar.

Description of the preferred embodiment

Referring now in more detail and with reference characters to the drawing, in FIGURE 1, a jar made from a

generally non-resilient material is shown having a body portion **2**, a neck portion **3**, and an intermediate portion designated generally at **4** joining the neck and body portions. The neck portion extends from shoulder **5** to upper rim **7** and is threaded therebetween at **8**.

Intermediate portion **4** comprises shoulder **5** and angular surface **6**, said angular surface being approximately 30° to the vertical.

Referring now to FIGURE 2, cap **9** is made from a resilient plastic material and comprises top portion **10** and peripheral wall **11**, said peripheral wall being internally threaded at **12** with an internal diameter at **13** substantially equal to the external diameter of the jar at the intersection of shoulder **5** and surface **6**. Cap **9** further comprises angular surface **14**, said surface being approximately 30° to the vertical. The surface **6** is approximately twice as long as surface **14**.

As can be seen in FIGURE 4*a*, surface **6** acts as a continuous abutment for surface **14** with full surface to surface contact providing either a water-tight or an air-tight sealed relation between jar and cap depending on the extent of threading of the cap on the jar. It should be noted that upper rim **7** is spaced from top portion **10** in assembly and thus permits allowance for additional threading of the cap on the jar. This additional threading, if desired, tightens the surface contact further by creating a resilient spreading force on cap surface **14** and thereby results in air-tight pressure seal.

It should be noted that the air-tight seal could be achieved by reversing the materials utilized, for example, by making the jar of resilient material and the cap of non-resilient material, or by a combination of resilient materials producing both resilient spreading of the cap angular surface and a resilient constriction of the jar angular surface.

In FIGURE 3, a second embodiment of a cap designated generally at **15** is shown. The cap **15** is similar to cap **9** and differs therefrom only in the cap construction pertaining to the angle of surface **16**, said angle being less than the angle of surface **6** and preferably about 25° to the vertical rather than 30°.

Thus, as the lowermost edge **17** of surface **16** contacts surface **6** of the jar, an initial water-tight seal is obtained thereat. Upon further threading of the cap on jar **1**, the surface **16** is resiliently forced outwardly by abutting surface **6** until surfaces **6** and **16** are in flush contact at 30°. The resiliency of the edge **17** provides an air-tight sealed relation between the contacting surfaces as shown in FIGURE 4*b*. It should be noted that when using the cap **15**, the upper rim **7** of the jar does not contact the top portion **18** of the cap, thus providing the possibility of a tight threading of the cap on the jar without stripping any threads.

In any embodiment of the invention, it must be kept in mind that at least one of the parts, either jar or cap, must have a camming angular surface.

It is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure Letters Patent of the United States is:

1. A closure assembly comprising a jar and a cap therefor, said jar having a body portion, a threaded neck portion having an upper rim, and an intermediate portion joining said neck portion to said body portion, said intermediate portion including a surface at a predetermined angle to the longitudinal axis of the jar, said cap including a top portion and a wall portion, said wall portion having a threaded portion engaging the threaded neck portion and a surface adjacent the threaded portion at

the end of the threaded portion remote from said top portion at a predetermined angle to the longitudinal axis of the jar, said jar surface and said cap surface being in substantial contact to provide a sealed relation therebetween, at least one of said jar and said cap being made from resilient material, said rim being spaced from said cap top portion in assembly such that additional threaded engagement between cap and jar will resiliently deform said at least one of said jar and said cap to further seal the jar and cap into air-tight relation.

2. The assembly set forth in claim 1 wherein said cap is made of resilient material, said cap surface being resiliently spread outwardly along said jar surface and exerting pressure thereon to form an air-tight sealed relation therebetween.

3. The assembly set forth in claim 1 wherein said jar is made of resilient material, said jar surface being resiliently constricted by said cap surface and exerting an outward pressure thereon to form an air-tight sealed relation therebetween.

4. The assembly set forth in claim 1 wherein said predetermined angles on said cap and jar surfaces are equal.

5. The assembly set forth in claim 1 wherein the predetermined angle of said cap surface is less than the predetermined angle of said jar surface.

6. A closure assembly comprising a resilient jar and a resilient cap therefor, said jar having a body portion, a threaded neck portion, and an intermediate portion including a surface at a predetermined angle to the longitudinal axis of the jar, said cap including a top portion and a wall portion, said wall portion having a threaded portion engaging the threaded neck portion and a surface adjacent the threaded portion at the end of the threaded portion remote from said top portion at a predetermined

angle to the longitudinal axis of the jar, said neck portion having an upper rim, said jar surface and said cap surface being is substantial contact, said rim being spaced from said cap top portion in assembly such that additional threaded engagement between cap and jar will resiliently spread said cap surface along said jar surface and constrict said jar surface along said cap surface into air-tight sealed relation therebetween.

7. A closure assembly comprising a jar element and a cap element therefor, said jar element having a body portion having an upper rim, a threaded neck portion, and an intermediate portion joining said neck portion to said body portion, said cap element including a top portion and a wall portion, said wall portion having a threaded portion engaging the threaded neck portion of said jar, at least one of said elements having a camming surface and at least one of said elements being made from resilient material, and said rim being spaced from said cap top portion in assembly, whereby a seal is formed between said elements on initial contact and whereby said at least one resilient element is cammed by said at least one camming surface on additional threaded engagement between said elements to form an air-tight sealed relation therebetween.

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GEORGE T. HALL, *Primary Examiner.*

U.S. Cl. X.R.

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