Nov. 13, 1956 V. L. RITTER 2,770,382

CONTAINER

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Fig. 1

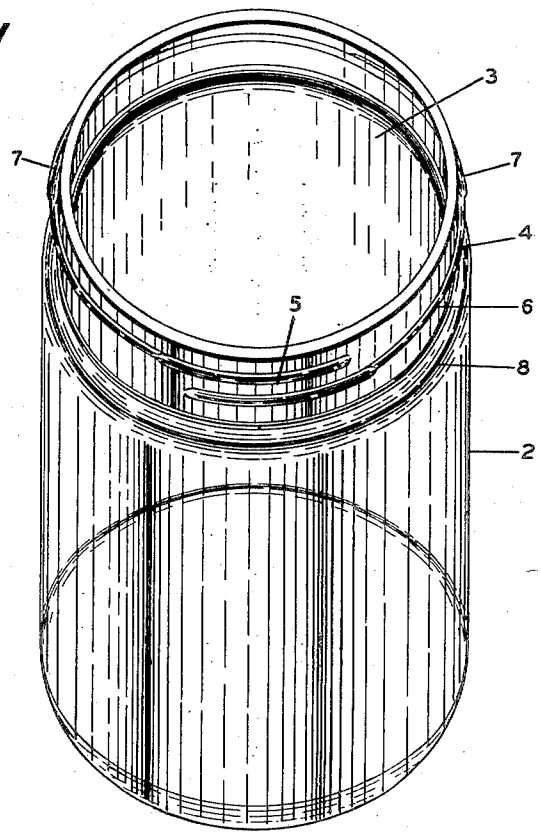
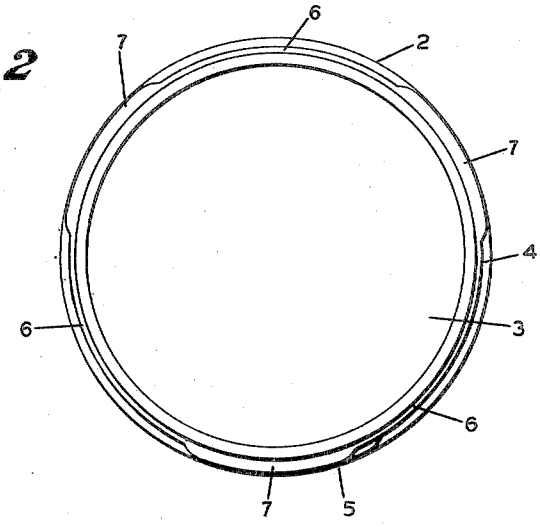


Fig. 2



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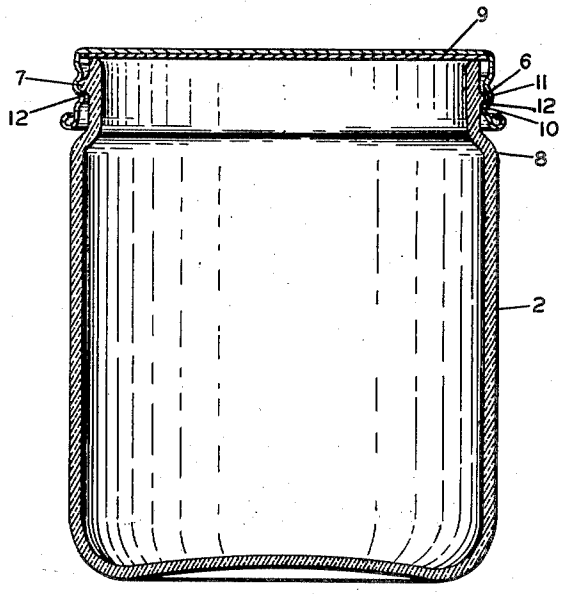
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Fig. 3



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2,770,382

CONTAINER

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6 Claims. (Cl. 215—31)

This invention relates to a thread finish for containers, and more particularly to a continuous thread having multiple bearing surfaces to prevent stresses in the walls of the container when a closure is placed in sealing position thereon.

In the application of closures to glass containers in sealing relationship, the common practice has been to provide a continuous helical thread on the neck of the container and a corresponding continuous helical thread on the interior of the closure skirt. In this type construction, when the closure is placed in sealing relationship on the container, the lip of the container engages a sealing liner placed in the interior of the closure and a seal is formed between the liner and the lip of the container. In order to insure a proper seal, it is necessary to screw the closure tightly on the container, exerting pressure between the thread of the closure and the thread of the container. This upward force exerted on the thread of the container by the closure creates a resultant force normal to the upward force. Since the container opening is of a diameter smaller than the diameter of the closure, this resultant force squeezes the neck of the container, distorting the same. The distortion of the container resulting from the squeezing action causes the closure to seek two pressure points on which the closure exerts its maximum pressure. In regular glassware, the two pressure points are 180 degrees apart; and the area between the pressure points is exposed to stresses, which results in a weakening of the glass and in many instances the stress is so great that the container breaks.

This two-point contact between the closure and the container causes the closure to distort to the extent that the sealing properties of the closure are diminished.

This breakage is particularly prevalent in wide mouth containers which have practically no shoulder between the body of the container and the neck portion carrying the thread. In containers of this type, the area under stress is on or close to the outer circumference of the container and is, therefore, exposed for contact when the containers are handled, as in packing in cartons or storing on shelves. This has caused considerable loss of containers and contents during handling.

One attempt to solve this problem is disclosed in Bromley Patent No. 2,585,624. This patent shows a plurality of relatively short depending projections on the thread of the container to serve as fulcrum points for the closure. The chief disadvantage of this arrangement is that the closure is unsupported in the areas where the thread of the closure does not engage the projections. This unsupported condition permits the closure to flex upwardly in these areas and break the seal.

In order to overcome the disadvantages resulting from the conventional type of container and closure described above, I have developed a thread finish for containers in which predetermined pressure areas are positioned on the thread of the container. For best results, it is essential that there be an odd number of pressure points arranged around the neck of the container so positioned

that no two of them or portions thereof lie diametrically opposite one another.

In a structure of this type, when the closure is applied to the container and sealing pressure is applied, the component of force normal to the sealing pressure will be distributed among an odd number of pressure points around the circumference of the container, no two of which are diametrically opposite one another; and, therefore, there is no direct squeeze across the mouth of the container.

An object of this invention is to provide a continuous thread finish on containers, which thread finish is provided with a predetermined number of pressure points spaced so as to greatly diminish the amount of stress set up by the application of a screw closure to the mouth of the container.

Other advantages will become obvious upon examination of the attached drawings, in which:

Figure 1 is a perspective view of a container having the proposed thread finish;

Figure 2 is a top plan view of the same container; and

Figure 3 is a cross-sectional view of the container with the closure applied in sealing relationship.

Referring to Figure 1, there is shown a container 2 of the wide mouth type having a top opening 3. Surrounding the neck of the container is a thread 4 which is of the desired shape and of sufficient length to overlap a short distance in the area 5 as shown in the drawing. The thread 4 is provided with areas 6 in which the thread has been substantially reduced in size. This leaves the outstanding areas 7 upon which the pressure of the closure will be exerted when the mouth of the container assumes a slightly out-of-round configuration. The number of outstanding areas 7 is preferably an odd number so that no two will be positioned diametrically opposite one another. They are also of a size so that no part of one projection will be diametrically opposite any portion of another projection. With an arrangement of this kind, there are no diametrically opposed forces set up when the closure is screwed on the container. This eliminates to a great extent the stresses set up in the areas 6 between the pressure points. In the specific embodiment, there are three pressure points located around the circumference of the container. This is considered the minimum permissible; however, a larger number will give the same result so long as no two or portions of any two are positioned diametrically opposite one another. It should be borne in mind that if a greater number than three is employed, the container closure will seek three points to apply the maximum pressure. In the specific embodiment shown comprising three projections 7, it has been found desirable to have each projection comprise approximately 50 degrees of the circumference of the container neck.

It will be noted that the container shown herein is substantially straight sided with a very slight shoulder 8 at the point where the neck of the container joins the body of the container. The invention disclosed herein is most useful in this type of container, inasmuch as there is a minimum amount of reinforcement provided by the shoulder. In another type of ware having a smaller neck opening and a larger shoulder, the shoulder increases the strength of the container; and there is less likelihood of breakage resulting from strain set up when the closure is placed in sealing position on the container.

The bottom surface of the thread of the container, which is the surface engaging the thread of the closure when the closure is placed on the container, is in a true uninterrupted helix and serves as a guide for the closure thread during the application of the closure to the container, thereby eliminating the possibility of the thread of the closure jumping over the thread of the container.

This continuous surface of the thread holds the cap in proper sealing position, eliminating the likelihood of upward flexing of the closure to break the seal.

From an observation of Figure 3, it will be seen that when the closure **9** is placed in sealing position on the container, the lower portion **10** of the thread **11** of the closure **9** is in continuous contact with the under surface **12** of the thread **4** on the neck of the container. It will also be observed that the outward projection **7** engages the full depth of the thread of the closure and the thread of the container diametrically opposite does not have the projection **7**, and hence only the bottom portion of the thread of the closure is in contact with the bottom portion of the thread of the container.

I claim:

1. A thread finish for a glass container, said finish comprising a continuous helical thread around the neck of the container for engagement with a complementary thread on a closure, said thread having an uninterrupted undersurface and being provided with a plurality of projections extending in a radially outwardly direction, said projections being so spaced that no two of them or portions thereof are diametrically opposed across the mouth of the container.

2. A thread finish for a glass container, said finish comprising a continuous helical thread around the neck of the container for engagement with a complementary thread on a closure, said thread having an uninterrupted undersurface and being provided with an odd number of projections extending radially outwardly therefrom, said projections being so spaced around the periphery of the container that no two of them are diametrically opposed across the mouth of the container.

3. A thread finish for a glass container, said finish comprising a continuous helical thread around the neck of the container for engagement with a complementary thread on a closure, said thread having an uninterrupted undersurface and being provided with three radially outwardly extending projections, said projections being so spaced that no two of them are diametrically opposed across the mouth of the container.

4. A thread finish for a glass container, said finish comprising a continuous helical thread around the neck of the container for engagement with a complementary thread on a closure, said thread having an uninterrupted undersurface and being provided with three radially outwardly extending projections, each projection comprising approximately 50 degrees of the circumference of the neck of the container.

5. In a sealed glass container, the combination comprising a glass container having a continuous helical thread around the neck thereof, said thread having an uninterrupted undersurface and being provided with a plurality of radially outwardly extending projections located at different points around the periphery of the container, and a closure applied in sealing position on said container, said closure having a thread complementary to the thread on the container, said closure thread being in continuous engagement with the undersurface of the container thread and in engagement with the outwardly extending projections of the container thread at several points around the periphery of the container, no two of which points are diametrically opposed to one another.

6. A thread finish for a glass container, said finish comprising a continuous helical thread around the neck of the glass container for engagement with a complementary thread on a closure, said thread having an uninterrupted undersurface and having a portion of said thread removed around the outer periphery thereof to form radially outstanding projections on the remaining portion of the thread, the arrangement of said projections being such that no two projections or portions thereof are diametrically opposed across the mouth of the container.

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