

Sept. 14, 1965

H. M. TURNER

3,206,060

COMBINATION PLASTIC CONTAINER WITH METAL CLOSURE

Filed Dec. 3, 1962

FIG. 1

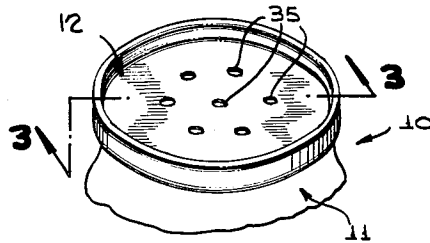


FIG. 2

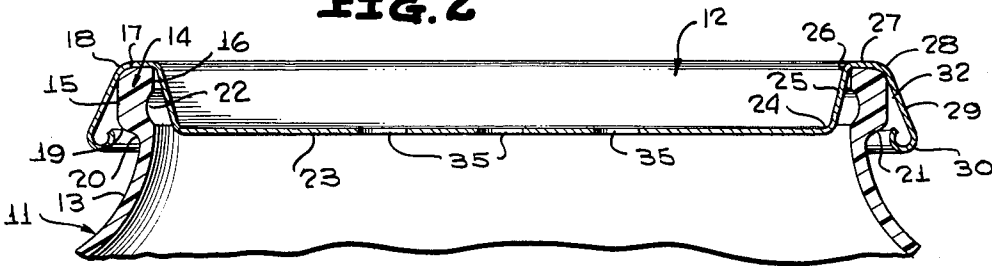


FIG. 3

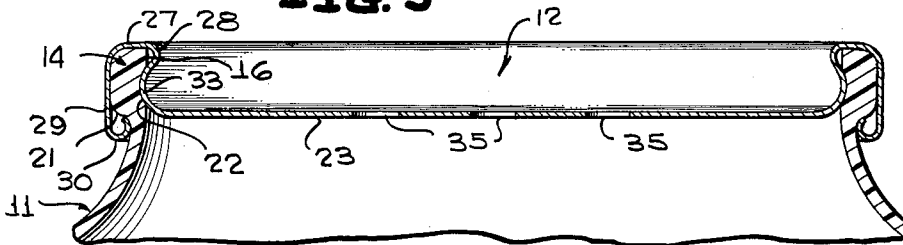
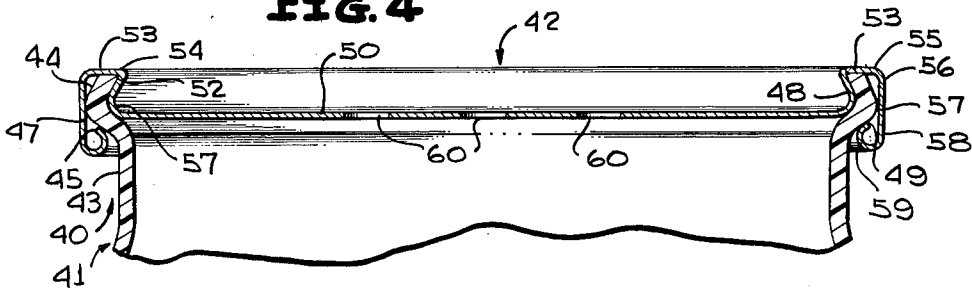


FIG. 4



HOWARD M. TURNER
INVENTOR

BY

Max M. Porter, Miller & Stewart
ATTORNEYS

1

2

3,206,060

COMBINATION PLASTIC CONTAINER WITH METAL CLOSURE

Howard M. Turner, Oak Forest, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York

Filed Dec. 3, 1962, Ser. No. 241,830

1 Claim. (Cl. 220—67)

This invention relates in general to new and useful improvements in the field containers, and more particularly relates to a novel plastic container having a metal closure.

Due to the resiliency of plastic materials normally utilized in the forming of plastic containers, it is difficult to obtain a good and lasting seal between a metal closure and a plastic container wherein the closure is of the permanent type as opposed to the type which is threaded onto the plastic container. Further, it is also desirable to provide a seam construction between a metal closure and a plastic container of the type which can be formed utilizing conventional type of equipment with minor modifications.

In view of the foregoing, it is the primary object of this invention to provide a novel container closure assembly wherein the container is formed of a plastic material and the closure is formed of metal, the container closure assembly providing for a permanent interlocking of the closure with a neck finish of the container.

Another object of this invention is to provide a novel seam construction between a metal closure and a neck finish of a plastic container wherein the metal closure is permanently secured to the plastic container in sealed relation and wherein the seaming operation may be performed utilizing conventional double seaming equipment now utilized for the purpose of applying can ends to can bodies, with modifications which are of a minor nature.

Another object of this invention is to provide a novel connection between a metal closure and a plastic container neck finish wherein there is a positive interlock between the metal closure and the neck finish so as to prevent the accidental breaking of the seal between the container closure and the container.

A further object of this invention is to provide a novel plastic container having a neck finish which provides an inwardly opening recess in the inner face of the neck finish, and a downwardly directed exterior shoulder on the neck finish wherein the metal closure may be interlocked with the neck finish by an outwardly directed inner portion thereof conforming to the cross-section of the recess, and an outer portion of the closure locked beneath the shoulder of the neck finish.

Yet another object of the invention is to provide a container closure assembly which includes a plastic container having a neck finish and a metal closure, the neck finish being of a varied cross-section and being generally thicker than the thickness of adjacent portions of the container, and the metal closure being interlocked with the neck finish.

Yet another object of this invention is to provide a novel container closure assembly which provides for positive interlock between a metal closure and a neck finish of a plastic container, the neck finish of the plastic container being of substantially the same wall thickness as the adjacent portion of the container and being generally V-shaped in cross-section, to provide for the necessary interlock between the container closure and the neck finish.

With the above, and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claim and the several views illustrated in the accompanying drawing.

In the drawings:

FIGURE 1 is a fragmentary top perspective view of the

upper end portion only of a combination plastic container and metal closure formed in accordance with this invention.

FIGURE 2 is an enlarged vertical sectional view through the upper portion only of the container and shows the metal closure loosely applied to the container prior to the actual seaming of the closure to the container.

FIGURE 3 is an enlarged fragmentary vertical sectional view similar to FIGURE 2 and taken along the line 3—3 of FIGURE 1, the view showing the metal closure seamed to the container.

FIGURE 4 is an enlarged fragmentary vertical sectional view similar to FIGURE 3 and shows a modified form of container construction with a similar closure seamed thereto.

Referring now to the drawing in detail, it will be seen that there is illustrated in FIGURE 1 an upper portion of a container construction generally referred to by the numeral 10. The container construction 10 includes a plastic container, generally referred to by the numeral 11, and a metal closure, generally referred to by the numeral 12. The plastic container 11 is of a molded construction and includes, as is best shown in FIGURES 2 and 3, an upper neck portion 13 which terminates in a neck finish 14. The neck finish 14 is thicker than the adjacent neck portion 13 and is generally rectangular in cross-section. The neck finish 14 includes generally parallel upstanding outer and inner walls 15 and 16, and a top wall 17. The top wall 17 is joined to the outer wall 15 by a radius 18, and a pair of radii 19 and 20 join the outer wall 15 to the outer wall portion of the neck portion 13. The radii 19 and 20 combine to define a shoulder 21, as is clearly indicated at the right hand side of FIGURE 2. The inner wall 16 is provided with an inwardly opening arcuate recess 22.

The metal closure 12 is of a one-piece construction and includes an end panel 23 which is connected by means of a radius 24 to an upwardly and outwardly sloping chuck wall 25. The chuck wall 25 is connected by means of a radius 26, to an annular top wall 27, which in turn, is connected by means of a radius 28 to a downwardly and outwardly flaring skirt 29. The skirt 29 preferably but not necessarily has the lower edge thereof reinforced by an inwardly and upwardly turned curl or bead 30. It will be noted that the chuck wall 25, the top wall 27 and the skirt 29 combine to define a downwardly opening channel 32 which receives the neck finish 14.

In the application of the metal closure 12 to the neck finish 14 of the plastic container 11, the metal closure 12 is first positioned upon the neck finish 14 as shown in FIGURE 2 and the chuck wall 25 is reformed to provide an outwardly directed and inwardly opening concave chuck wall 33 which is received within the recess 22 to thus form an interlock between the reformed chuck wall 33 and the inner wall 16 of the neck finish 14. During the reforming operation the skirt 29 is also formed around the neck finish 14 and assumes the position illustrated in FIGURE 3 with the bead 30 in engagement with the container 11 below the downwardly facing peripheral shoulder 21 of the neck finish.

It will be seen that once the closure 12 has been secured to the neck finish 14 of the container 11, it is firmly interlocked therewith. The arcuate chuck wall 33 shown in FIGURE 3 provides a positive interlock between the chuck wall 33 and the inner surface of the neck finish 14. Further, the tight interlocking of the skirt 29 around the outside of the neck finish 14 provides for a tight clamping of the neck finish 14 between the skirt 29 and the chuck wall 33. In addition, the bead 30, which functions as a reinforcement for the lower edge of the skirt 29, is interlocked beneath the shoulder 21 to prevent relative move-

3

ment between the neck finish 14 and the skirt 29. It is to be noted that when the closure 12 is sealed to the container 11, the end panel 23 of the closure 12 is recessed within the neck finish 14. Further, since the closure 12 is permanently secured to the neck finish 14, in order to dispense the contents of the container construction 10, the end panel 23 may be provided with suitable openings 35 through which the contents of the container construction 10 may be dispensed.

Referring now to FIGURE 4 in particular, it will be seen that there is illustrated a modified form of container construction which is generally referred to by the numeral 40. The container construction 40 includes a plastic container 41 and a metal closure 42. The plastic container 41 has a neck portion 43 which is reduced and which terminates the upper end thereof in a neck finish 44. Unlike the neck finish 14, the neck finish 44 is substantially of the same thickness as the neck portion 43. Accordingly, the neck finish 44 has been formed to be generally V-shaped in cross-section and includes a lower leg 45 integrally connected to the neck portion 43 and an upper leg 46, the legs 45 and 46 being connected together by an arcuate intermediate portion 47. The arrangement of the legs 45 and 46 is such to define an inwardly opening arcuate recess 48 in what may be considered the inner wall of the neck finish 44, and a downwardly facing peripheral shoulder 49, as is clearly indicated on the right-hand side of FIGURE 4.

Initially the metal closure 12 has a configuration similar to that shown in FIGURE 2. The metal closure 42, after being secured to the neck finish 44, includes an end panel 50 which is recessed generally within the confines of the neck finish 44. A reverse radius 51 extends around the end panel 50 and is seated in the recess 48. The reverse radius 51 is part of a chuck wall 52 which is engaged with the inner surface of the neck finish 44 and interlocked below the upper leg 46.

The metal closure 42 includes a top wall 53 which is integrally connected to the upper end of the chuck wall 52. The top wall 53 is connected to the chuck wall 52 by means of a radius 54. A similar radius 55 connects the top wall 53 to an upper portion 56 of a skirt 57. The skirt 57 has a lower portion 58 which is intumed below the lower leg 45 of the neck finish and generally engages with the shoulder 49 thereof. The skirt 57 terminates at its lower edge in upwardly and inwardly turned bead or coil 59 which serves to reinforce the lower edge of the skirt 57. The bead 59 is engaged with the underside of the shoulder 49 and prevents upwardly movement of the outer portion of the closure 42 relative to the container 41.

It will be readily apparent that the configuration of the portions of the metal closure 42 which engage the neck finish 44 provides for the firm gripping of the neck finish 44 so as to permanently retain the metal closure 42 on the container 41. It is to be also seen that there is a seal formed between the neck finish 44 and the metal closure 42. In order that the contents of the container construction 40 may be dispensed, the end panel 50 may be provided with a plurality of apertures 60. The apertures 60 may be arranged in any pattern.

It is to be understood that the metal closure 42 may be

4

secured to the neck finish 44 in a manner similar to that set forth above relative to the closure 12. The necessary securing operation may take place within a conventional type of securing device.

It will be readily apparent upon inspecting the two container constructions 10 and 40 that the metal closures are securely attached to the plastic containers in sealed relation thereto and despite the fact that the plastic material of the plastic containers is deformable and resilient, a desired interlock is obtained between the metal closures and the plastic containers. The openings 35 and 60 are normally covered with a removable strip of tape (not shown) which is removed by the ultimate user.

Although only two embodiments of the invention have been specifically illustrated and described herein, it is to be understood that minor modifications may be made in the container closure assemblies illustrated and described herein within the spirit and scope of the invention, as defined in the appended claim. As an example, the openings 35 and 60 in the closures 12 and 42 respectively, may be omitted if desired when the containers are to contain a liquid or other material that is not to be dispensed by shaking. In such case the closures may be opened by means of a beer can opener or other suitable opening means. The closures also may be provided with a tear strip type opening device, said tear strip being defined by score lines and having a pull tab attached thereto.

I claim:

A container closure assembly comprising a pre-molded container of resilient deformable plastic material having a body terminating at a neck finish and a metal closure permanently interlocked with said neck finish, said body being defined by a body wall of a uniform predetermined thickness, said body wall being integrally joined to said neck finish at a juncture portion defined by an internal peripheral recess and an external downwardly directed outer peripheral shoulder, said shoulder being axially offset downwardly relative to said recess, said neck finish including the juncture portion thereof being appreciably thicker than the predetermined thickness of said body whereby the strength and integrity of said container is not reduced due to the presence of said recess, said closure having an end panel recessed within said neck finish and an inner peripheral wall interlocked in said recess of said neck finish without substantial deformation of said neck finish, and said closure also including a skirt portion terminating in a bead locked beneath said shoulder.

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THERON E. CONDON, *Primary Examiner.*

60 EARLE A. DRUMMOND, GEORGE O. RALSTON,
Examiners.