A molded plastic drinking sleeve for push-on assembly to a neck portion of a container according to a typical embodiment includes an annular body formed by an annular sidewall having a uniform taper from a first open end to an opposite second open end, the annular sidewall defining an open interior. The annular sidewall further includes a series of external threads and a roller abutment at the base of the threads for stopping the roller equipment used to help fabricate a metal closing cap that is designed to thread onto the plastic drinking sleeve. The annular sidewall further includes an inner surface formed with at least one raised, inwardly-extending projection constructed and arranged to contact the neck portion with an interference fit.
Fig. 4

Fig. 5
BEVERAGE CONTAINER WITH THREADED PLASTIC DRINKING SLEEVE

BACKGROUND OF THE INVENTION

[0001] The present invention relates in general to beverage containers of the type where the consumer may drink directly from the dispensing opening in the neck of the container. More specifically, the present invention relates to the addition of an externally-threaded, plastic drinking sleeve to the neck of the container to facilitate and improve the drinking experience.

[0002] As one example of the type of beverage container that is suitable for the plastic drinking sleeve of the present invention, consider a metal beer "bottle" with a screw-on, screw-off metal cap. Without the plastic drinking sleeve of the present invention, a consumer desiring to drink directly from the bottle would need to contact the threaded metal opening while drinking. Any metal edges, roughness or burrs that might be left as part of the bottle or created from the interaction of the threaded metal closing cap and the bottle would be a concern. These features could create discomfort to the consumer and might force the consumer to dispense the contents from the container into another container before consuming. While this may not be a problem in some environments, beverages of this type are often consumed when no other container is available for the transfer of contents. Therefore, the addition of a plastic drinking sleeve, according to the present invention, improves the overall fit and feel and the overall drinking experience.

[0003] By applying a threaded plastic sleeve to the neck of the bottle, any rough metal edges or burrs are either eliminated and/or covered with a smooth, molded plastic structure. The plastic sleeve is externally-threaded so as to receive the metal closing cap. As such, it is important that there be a secure seal so as to capture and hold the internal pressure for carbonated beverages. This requires that there be a close conforming fit and a tight threaded engagement between the plastic sleeve and the closing cap for a secure, leak-free interface, capturing and maintaining the internal pressure.

[0004] Whether during the capping procedure at the time of filling the container or at the time the closing cap is being removed for the first time, it is important that the plastic sleeve not loosen, slip, or turn (rotate) relative to the neck of the container. Preferably, the plastic sleeve is securely connected or anchored to the neck so that, once assembled, there is no relative motion between the plastic sleeve and the neck of the container. It is also important to have an assembly procedure for the plastic sleeve that is quick and simple, yet reliable and predictable.

[0005] The threaded plastic drinking sleeve of the present invention includes various structural features, characteristics and cooperative relationships, each of which contribute to some improvement or benefit to some portion of an improvement or benefit of the overall closure assembly. The referenced closure assembly includes the container neck, the plastic sleeve, and the closing cap. While the present invention is directed principally to the threaded plastic drinking sleeve, its fit and assembly relative to the container neck is important. Similarly, the nature of the threaded engagement between the closing cap and the threaded plastic drinking sleeve is important in that the contents, typically under pressure, must be captured without gas or liquid leakage. In order to maximize the benefits afforded by the plastic drinking sleeve, as disclosed herein, the present invention includes a modification to the geometry of the container neck.

BRIEF SUMMARY OF THE INVENTION

[0006] A plastic drinking sleeve for push-on assembly to a neck portion of a beverage container, according to one embodiment of the present invention, includes an annular body formed by an annular sidewall defining an open interior, the annular sidewall having an open first end and, opposite to the first end, an open second end and including a series of external threads, the annular sidewall further including an inner surface formed with at least one raised, inwardly-extending projection constructed and arranged to contact the neck portion with an interference fit, when the plastic drinking sleeve is assembled onto the neck portion.

[0007] One object of the present invention is to provide an improved plastic drinking sleeve for a beverage container.

[0008] Related objects and advantages of the present invention will be apparent from the following description.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0009] FIG. 1 is an exploded view of a beverage container including a plastic drinking sleeve and metal closing cap according to one embodiment of the present invention.

[0010] FIG. 2 is an exploded view of the plastic drinking sleeve and beverage container illustrating the first stage in their assembly sequence.

[0011] FIG. 3 is a front elevation view, in partial section, of the FIG. 2 plastic drinking sleeve and container neck combination illustrating the second stage in the assembly procedure.

[0012] FIG. 4 is a front elevation view, in partial section, of the plastic drinking sleeve and container neck combination showing the third stage in the assembly procedure.

[0013] FIG. 5 is a front elevation view, in partial section, of the plastic drinking sleeve and container neck combination showing the fourth and final stage of the assembly procedure.

[0014] FIG. 6 is a front elevation view, in full section, of the FIG. 1 plastic drinking sleeve.

[0015] FIG. 7 is a front elevation view of the FIG. 1 plastic drinking sleeve illustrating a thread stop feature.

DETAILED DESCRIPTION OF THE INVENTION

[0016] For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the embodiments illustrated in the drawings and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated device, and such further applications of the principles of the invention as illustrated
thein being contemplated as would normally occur to one skilled in the art to which the invention relates.

[0017] Referring to FIGS. 1-5, there is illustrated a molded plastic drinking sleeve 20 that is securely attached to the annular neck 21 of a beverage container 22. In the illustrative embodiment of FIG. 1, the beverage container 22 is a metal beer “bottle” and plastic sleeve 20 is intended to be permanently attached to the neck 21. The outer surface of sleeve 20 is externally threaded in the form of threads 23 for receipt of an internally-threaded metal closing cap 24.

[0018] In terms of the overall shapes and geometries, the container 22 can assume virtually any size and shape, but preferably there will be an annular abutment form such as shoulder 27 located at the bottom or base of the neck 21. Neck 21 is a hollow annular form with two adjoining frustoconical portions 28 and 29. While the normal or prior art style of neck profile is typically a straight conical (frustoconical) profile, this particular shape is limited to upper portion 28. Lower portion 29 has been changed according to the present invention by being slightly flared in a radially outward direction. This change results in portion 29 having a greater cone angle, as measured at the apex compared to the cone angle of portion 28. Neck 21, including portions 28 and 29, is circumferentially symmetrical about its axial centerline 21a.

[0019] The plastic drinking sleeve 20 is a hollow, generally annular form with external threads 23. Sleeve 20 is a unitary, molded plastic structure that can be fabricated from a suitable material based upon the container contents and compatibility with the metal of the container and the metal of the closing cap. The longitudinally opposite ends 30 and 31 each define a generally circular opening 30a and 31a, respectively. In terms of the present invention, the plastic drinking sleeve includes two interior features and two exterior features that can be used together, separately, or in any combination of two or three as disclosed herein as part of the present invention. While these various features cooperate to provide an improved plastic sleeve, these features individually provide a benefit or improvement, albeit less than what all four contribute as a cooperative group. Sleeve 20 is circumferentially symmetrical about axial centerline 20a and when sleeve 20 is properly installed onto the container neck 21, axial centerline 20a and 21a should generally coincide.

[0020] The closing cap 24 is an annular metal component that is internally threaded and provided with a frangible ring 34 at its base that locks onto the lower portion 33 of the plastic drinking sleeve 20. Once the closing cap 24 is securely (initially) tightened onto sleeve 20 at the time of filling, ring 34 locks beneath radial lip 35 into annular recess 36. Retrograde turning of closing cap 24 so as to axially move closing cap 24 upwardly off of sleeve 20 causes ring 34 to abut up against the underside surface 37 of radial lip 35. This abutment prevents further upward travel of ring 34 and with continued counterclockwise turning of closing cap 24 (unthreading), the frangible elements 38 that connect ring 34 to the remainder of closing cap 24 fracture, leaving ring 34 in recess 36 between surface 37 and shoulder 27 and permitting the closing cap 24 to be removed from sleeve 20.

[0021] With continued reference to FIGS. 1-5, the structural details of plastic drinking sleeve 20 will be described, including its installation procedure and sequence so as to secure the sleeve 20 onto the neck 21 of container 22. Drawing FIGS. 6 and 7 describe further features of sleeve 20 including its cross-sectional form.

[0022] The first aspect of note in terms of the overall construction of plastic drinking sleeve 20 is that it presses onto or pushes onto neck 21 and there is a certain degree of dimensional interference between the plastic drinking sleeve and the neck of the container that contributes to the overall secure fit between these two components. This degree of dimensional interference has at least two effects in terms of the sleeve and container combination. First, there is some degree of dimensional expansion to the outer surface of plastic sleeve 20 as it is pressed on or pushed onto the neck 21. It is estimated that there is approximately an 8 percent size expansion of the outer profile of the sleeve 20. This dimensional expansion affects the thread size in terms of the thread major diameter and the thread minor diameter. There is a size difference (8 percent) between the free dimensions prior to installation and the dimensions after the sleeve is pressed onto the neck. In order to compensate for the dimensional expansion that is experienced as the plastic sleeve is pushed onto the neck with an interference fit, the present invention specifically configures the molded plastic external threads to the small side dimensionally. This smaller or sealed-down starting size for the plastic sleeve threads, as initially molded and prior to assembly, results in the threads 23 being able to expand to the desired final dimension in terms of the thread major diameter and the thread minor diameter, once the sleeve 20 is fully and properly installed onto the neck 21 of container 22. There is in effect a first thread major diameter and a first thread minor diameter prior to assembly of sleeve 20 and then larger second thread major and minor diameters after assembly.

[0023] Secondly, the degree of dimensional interference influences how tightly the sleeve 20 fits onto the neck 21 as the sleeve 20 is pushed onto the neck. In order to enhance the tightness and security of the sleeve-to-neck connection, the inner surface 41 of the plastic sleeve 20 is molded with an equally-spaced series of six (6) tear drop-shaped raised projections or bumps 42. These bumps extend away from inner surface 41 in a radially inward direction toward axial centerline 20a. This specific operation and functioning of these raised bumps 42 will be described in greater detail hereinafter.

[0024] Referring to FIGS. 2-5, the installation or assembly sequence of the plastic sleeve 20 onto neck 21 is illustrated in four steps or stages. Beginning or starting with the illustration in FIG. 2, the neck 21 of the container is presented for receipt of the unitary, molded plastic drinking sleeve 20 which goes to the neck by axial movement (push-on) including a sliding interference fit of sleeve 20 onto neck 21. In FIG. 3, the sleeve 20 is pushed onto the neck 21 and the sizes, shapes, and contours of the sleeve engage the upper and lower frustoconical portions 28 and 29, respectively. As previously described, the lower portion 29 has a slightly flared profile and this shape, in cooperation with the raised bumps 42, creates added interference to the aforementioned dimensional interference as the sleeve 20 begins to encounter lower portion 29.

[0025] As illustrated in FIG. 4, continued force or pressure in an axial direction on sleeve 20 pushes it fully onto neck 21 into a fully assembled condition with regard to the axial
position between the two. In this condition, the lower end 30 of sleeve 20 approaches shoulder 27 and will preferably contact shoulder 27. The fully assembled condition of sleeve 20 onto neck 21, as illustrated in FIG. 4, leaves annular portion 43 of neck 21, axially extending above or beyond the upper end 31 of sleeve 20. Annular portion 43 is then formed over and around upper end 31 (see FIG. 5) to create annular lip 44 that helps capture sleeve 20 and cooperates with the interference to prevent any upward axial travel of sleeve 20 relative to neck 21. Any downward axial travel of sleeve 20 relative to neck 21 is prevented in part by shoulder 27 and in part by the interference fit of plastic sleeve 20 onto neck 21.

[0026] Referring now to FIG. 6, the plastic sleeve 20 is illustrated in full section form to help show the specific geometry of the various portions and sections and their spatial and functional relationships. The inner surface 41 includes a tapered portion extending downwardly from upper end 31 to lower end 30. One omitted feature of note is that there is no lead-in chamfer in area 47 as would normally be seen or expected around lower end 30. The angle of taper for the inner surface 41 from end 31 to end 30, excluding bumps 42, is preferably 1½ degrees, but the present invention contemplates that a suitable taper can range from 1 degree up to 2 degrees. The direction of taper is outwardly diverging from end 31 to end 30. This taper provides adequate clearance to forego the need for any lead-in chamfer. By omitting any lead-in chamfer adjacent lower end 30, additional surface contact area is provided as part of the inner surface 41 of sleeve 20 for more complete engagement of the sleeve inside surface against the outer surface of neck 21. It is envisioned that having more surface area contact between sleeve 20 and neck 21 will help hold sleeve 20 in place on neck 21 and lessen the risk of sleeve 20 turning or having any relative motion with respect to neck 21 during initial assembly, filling, and at subsequent times as the closing cap 24 is removed, reapplied, and removed again.

[0027] The sectioning plane of FIG. 6 extends through an opposing pair of raised bumps 42. The described tear drop shape of each raised bump 42 applies to the planar outline and to the side view wherein the upper tip is thinner than the bulbous opposite end. In this way, the innermost (radially inward) surface of each tear drop-shaped bump 42 generally follows the profile of upper portion 28. However, when the lower portion 29 of neck 21 is encountered by the series of raised bumps 42, there is interference with portion 29 and the sleeve 20 creates a tighter and tighter fit on the neck 21 with continued downward axial travel of sleeve 20. Additionally, as the sleeve 20 is fully seated, the raised bumps 42 deform both the metal of the lower portion 29 and the sleeve 20, thereby helping to securely anchor the sleeve 20 to the neck. The degree of interference and the material choices for sleeve 20 and neck 21 cooperate to create the deforming of both components. The effect of using the raised bumps 42, and one benefit of actually deforming the metal of the neck 21 by bumps 42, is to prevent any turning or rotation of the sleeve 20 relative to neck 21. As such, the closing cap 24 can be properly threaded onto and off of the sleeve 20 without also turning or rotating the sleeve on the neck. This means that the closing cap can be fully tightened as part of the filling and capping procedures in order to properly close the container and seal in the contents. When the closing cap 24 is to be removed from the sleeve 20, whether the first time in order to sever the frangible ring 34 or subsequently while the contents are being consumed, the closing cap accurately tracks the external threads 23 without any slippage between the sleeve 20 and neck 21.

[0028] The capping procedure involves the automated (threaded) assembly of the closing cap 24 onto sleeve 20. The initial assembly of the closing cap 24 includes seating of the frangible ring 34 portion into the annular recess 36 below radial lip 35. One of the realities of structures of this type in terms of the sleeve 20 and closing cap 24 is the need for the thread pitches to be closely matched for the best fit and a securely connected, tightly sealed interface. The technique that is used is to use tracking rollers to trace the threads on the sleeve by pushing against a closing cap pre-form and thereby control the fabrication of the closing cap 24 based on the thread specifications. In this manner, whatever expansion or reshaping of the sleeve 20 takes place when the sleeve is assembled onto the container neck, these variables will be considered and utilized in fabricating a “matching” closing cap. The variations that might occur from one assembled sleeve 20 to another are read by the tracing or tracking roller and translated into the sizing and shaping of the cooperating threads of the metal closing cap 24. This procedure creates a closer and better fitting metal closing cap 24 that is specifically matched for a corresponding plastic sleeve 20.

[0029] One of the concerns with the presently available tracking roller equipment is that the tracking or tracing rollers continue to travel even after the profile of the threads has been traced and the threads on the closing cap formed. This roller equipment continues to run even after tracing the threaded profile, even though no new shape information is being generated. As a result, there is a time and equipment utilization inefficiency. More specifically, in the manufacturing process directed to creating and applying the metal closing cap 24, the cap begins as a metal form or preform that needs to be properly sized and shaped in order to conform to the neck of the container; in this case, it needs to be conformed to the neck, as fitted with plastic sleeve 20. The closing cap 24 will ultimately end up as an internally-threaded component, but initially the metal preform is not threaded. The threads are created by conforming that metal preform to the size and shape of the external threads of plastic sleeve 20. Ideally the threads on the closing cap 24 will be sized and shaped to closely conform to the external threads on the plastic sleeve. This is virtually guaranteed by using the size, shape, and threaded form of the plastic sleeve profile as the mandrel for shaping the metal closing cap. With use of the plastic sleeve as a shaping mandrel, there is a high degree of correspondence and a better fit and function for the finished closing cap 24 as it fits onto threaded plastic sleeve 20.

[0030] Since the plastic sleeve 20 can vary or change slightly as part of the plastic molding process and since it can change again when pushed onto the neck 21 of container 22, using the plastic sleeve profile as a mandrel helps to "match" the closing cap being fabricated with the plastic sleeve that receives the cap. This higher degree of conformance or correspondence helps to ensure a tightly closed combination that provides the requisite sealing. This closing cap-to-plastic sleeve fit also helps to ensure that the frangible ring 34 will separate properly and that the closing cap 24 will not become a "spinner". The term "spinner" is used
for closures that do not break the frangible ring when twisted off. The same term is used to describe closures that have been turned the wrong way (i.e., clockwise) on opening, stripping the thread while not breaking the frangible ring.

[0031] The closing cap fabrication and the subsequent capping process or procedure for roll-on-piller-proof (ROPP) closures (i.e., closing cap 24) is a high-speed event. A typical production line provides a capping head that is lowered automatically over the metal preform of the closing cap as it is positioned over the plastic sleeve 20. A pressure is applied that creates a seal between the sleeve and any cap liner material.

[0032] As the capping head rotates, a spring pivot system causes the equipment rollers to move inwardly. These rollers engage the outer surface of the metal preform for closing cap 24 and push the metal inwardly as the rollers track the threaded form of the plastic sleeve that was pushed onto the neck 21 of container 22. The forming of the metal of the closing cap preform, using the plastic sleeve 20 as a mandrel, creates the necessary threaded form for the closing cap 24 that precisely matches and closes conforms to that particular plastic sleeve. The published paper entitled “Understanding The Roll-On-Piller-Proof Process” by J. Langley, Dr. A. Yoxall, and Prof. John Yates of the Department of Mechanical Engineering, The University of Sheffield, UK, and P. Taylor of Tinsley Bridge Ltd., Sheffield, UK, provides a discussion of this process.

[0033] As described, the capping equipment does not have the “intelligence” to stop the rollers from continuing to roll around the exterior of the closing cap once the threaded form is created and the capping completed.

[0034] It would therefore be an improvement to this fabrication and capping process to modify the roller equipment to eliminate or reduce these inefficiencies. The present invention though approaches a solution to this issue not by modifying the roller equipment, but instead by incorporating into the external threads 23 of sleeve 20 a stop in the form of a roller abutment 50. This roller abutment or stop 50 is unitarily formed at the base of the external threads 23 on a minor diameter surface. As the roller encounters this abutment 50, the roller travel stops. There is no continued movement of the roller and no time or peace equipment utilization inefficiency as a result of adding the thread stop 50 for roller abutment.

[0035] The roller abutment 50 has a half-moon shape and functions as a door stop to the roller travel. As the tracing or tracking roller would otherwise keep spinning, this roller abutment 50 provides a stopping point and further provides a better looking capped assembly.

[0036] While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character, it being understood that only the preferred embodiment has been shown and described and that all changes and modifications that come within the spirit of the invention are desired to be protected.

1. A plastic drinking sleeve for push-on assembly to a neck portion of a beverage container, said plastic drinking sleeve comprising:

an annular body formed by an annular sidewall defining an open interior, said annular sidewall having an open first end and opposite to said first end an open second end and including a series of external threads, said annular sidewall further including an inner surface formed with at least one milled, inwardly-extending projection constructed and arranged to contact said neck portion with an interference fit when said plastic drinking sleeve is assembled onto said neck portion.

2. The plastic drinking sleeve of claim 1 wherein said inner surface is outwardly diverging from said first end to said second end.

3. The plastic drinking sleeve of claim 2 wherein said outwardly diverging inner surface is tapered at approximately 1½ degrees.

4. The plastic drinking sleeve of claim 2 wherein said series of external threads are constructed and arranged to sealingly receive a threaded closing cap when said plastic drinking sleeve is assembled onto said neck portion.

5. The plastic drinking sleeve of claim 4 wherein said series of external threads are constructed and arranged to begin with a scaled-down thread size and wherein said annular body is constructed and arranged to expand due to assembly onto said neck portion, said expanding causes said scaled-down thread size to expand to the requisite size to sealingly receive said threaded closing cap.

6. The plastic drinking sleeve of claim 5 wherein said annular body includes a roller abutment stop integrally formed at the base of said series of external threads.

7. The plastic drinking sleeve of claim 1 wherein said series of external threads are constructed and arranged to sealingly receive a threaded closing cap when said plastic drinking sleeve is assembled onto said neck portion.

8. The plastic drinking sleeve of claim 7 wherein said series of external threads are constructed and arranged to begin with a scaled-down thread size and wherein said annular body is constructed and arranged to expand due to assembly onto said neck portion, said expanding causes said scaled-down thread size to expand to the requisite size to sealingly receive said threaded closing cap.

9. The plastic drinking sleeve of claim 8 wherein said annular body includes a roller abutment stop integrally formed at the base of said series of external threads.

10. The plastic drinking sleeve of claim 1 wherein said annular body includes a roller abutment stop integrally formed at the base of said series of external threads.

11. A plastic drinking sleeve for push-on assembly to a neck portion of a beverage container, said plastic drinking sleeve comprising:

an annular body formed by an annular sidewall defining an open interior, said annular sidewall having an open first end and opposite to said first end an open second end and including a series of external threads, said annular sidewall further including an inner surface constructed and arranged with an outwardly diverging shape extending from said first end to said second end.

12. The plastic drinking sleeve of claim 11 wherein said series of external threads are constructed and arranged to sealingly receive a threaded closing cap when said plastic drinking sleeve is assembled onto said neck portion.

13. The plastic drinking sleeve of claim 12 wherein said series of external threads are constructed and arranged to
begin with a scaled-down thread size and wherein said annular body is constructed and arranged to expand due to assembly onto said neck portion, said expanding causes said scaled-down thread size to expand to the requisite size to sealingly receive said threaded closing cap.

14. The plastic drinking sleeve of claim 13 wherein said annular body includes a roller abutment stop integrally formed at the base of said series of external threads.

15. The plastic drinking sleeve of claim 11 wherein said annular body includes a roller abutment stop integrally formed at the base of said series of external threads.

16. A plastic drinking sleeve for push-on assembly to a neck portion of a beverage container, said plastic drinking sleeve comprising:

an annular body formed by an annular sidewall defining an open interior, said annular sidewall having an open first end and opposite to said first end an open second end and including a series of external threads, said annular sidewall further including an inner surface, said series of external threads being constructed and arranged to sealingly receive a threaded closing cap when said plastic drinking spout is assembled onto said neck portion, said series of external throws being constructed and arranged to begin with a scaled-down thread size and wherein said annular body is constructed and arranged to expand due to assembly onto said neck portion, said expanding causing said scaled-down thread size to expand to the requisite size to sealingly receive said threaded closing cap.

17. The plastic drinking sleeve of claim 16 wherein said annular body includes a roller abutment stop integrally formed at the base of said series of external threads.

18. A plastic drinking sleeve for push-on assembly to a neck portion of a beverage container, said plastic drinking sleeve comprising:

an annular body formed by an annular sidewall defining an open interior, said annular sidewall having an open first end and opposite to said first end an open second end and including a series of external threads, said annular sidewall further including an inner surface, said annular body including a roller abutment stop integrally formed at the base of said series of external threads.

19. In combination:

a beverage container including a neck portion;

a plastic drinking sleeve for push-on assembly to said neck portion, said plastic drinking sleeve comprising:

an annular body formed by an annular sidewall defining an open interior, said annular sidewall having an open first end and opposite to said first end an open second end and including a series of external threads, said annular sidewall further including an inner surface formed with at least one raised, inwardly-extending projection constructed and arranged to contact said neck portion with an interference fit when said plastic drinking sleeve is assembled onto said neck portion; and

a closing cap constructed and arranged to sealingly thread onto said series of external threads with said plastic drinking sleeve pushed onto said neck portion.

20. The combination of claim 19 wherein said inner surface is outwardly diverging from said first end to said second end.

21. The combination of claim 20 wherein said outwardly diverging inner surface is tapered at approximately 1½ degrees.

22. The combination of claim 21 wherein said annular body includes a roller abutment stop integrally formed at the base of said series of external threads.

23. The combination of claim 19 wherein said plastic drinking sleeve having a first thread major diameter dimension and a first thread minor diameter dimension prior to assembly to said neck portion and a second thread major diameter dimension and a second thread minor diameter dimension after push-on assembly of said plastic drinking sleeve to said neck portion, said second dimensions being larger than said corresponding first dimensions due to expansion of said annular body resulting from an interference fit between said plastic drinking sleeve and said neck portion when said plastic drinking sleeve is assembled onto said neck portion.

* * * * *