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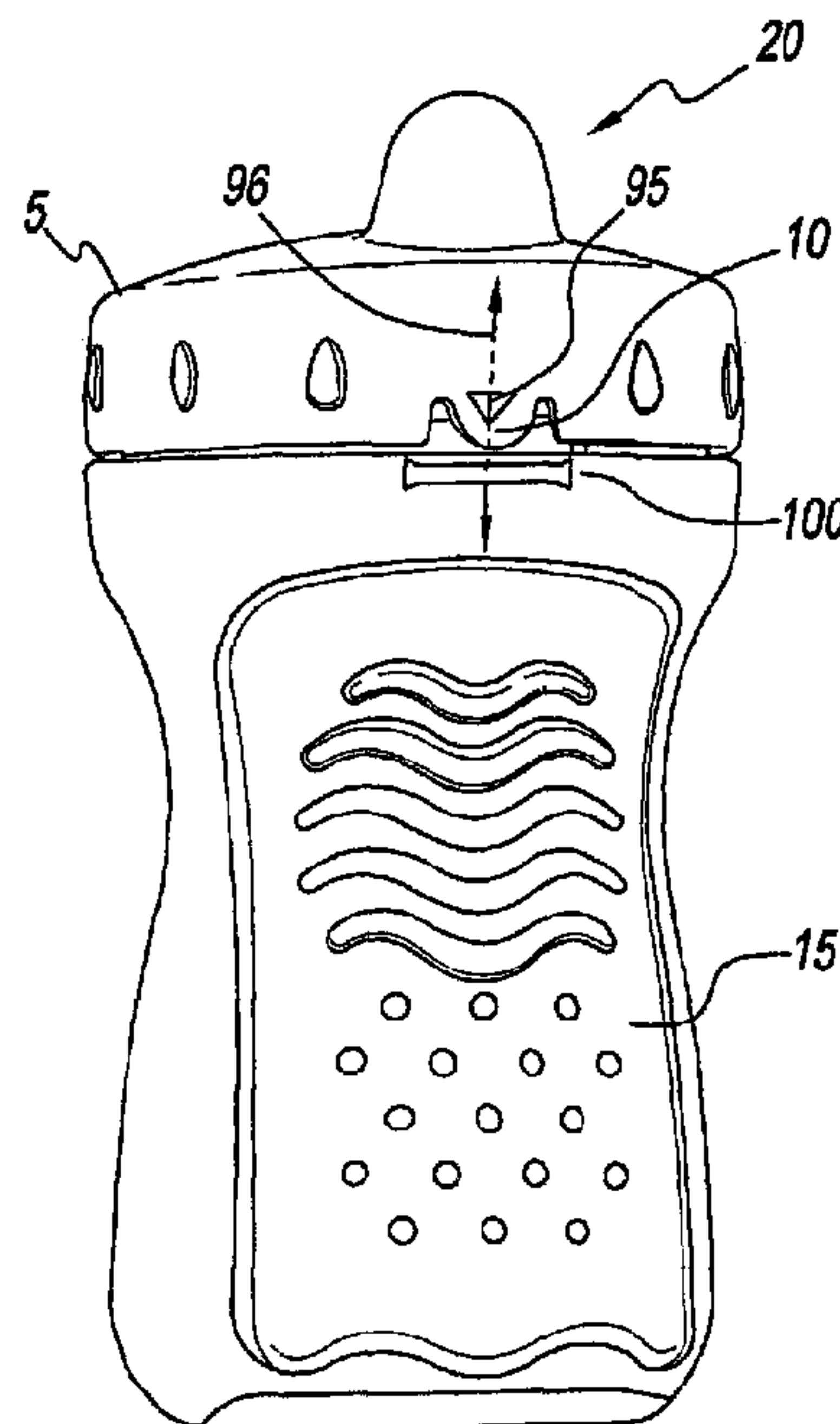
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(54) Titre : MECANISME D'INDICATION DE SCELLEMENT POUR RECIPIENTS

(54) Title: SEAL INDICATION MECHANISM FOR CONTAINERS



(57) Abrégé/Abstract:

A seal indication mechanism for a container assembly having a container and a lid is provided. The seal indication mechanism has a portion on the container and a portion on the lid that interface to indicate to a user that a seal has been achieved between the container and the lid. The seal indication mechanism provides an audible, tactile and visual indication to the user that the lid and container are sealed. The seal indication mechanism functions to indicate a range of sealed relative positions between the container and the lid throughout the usable life of the container assembly.



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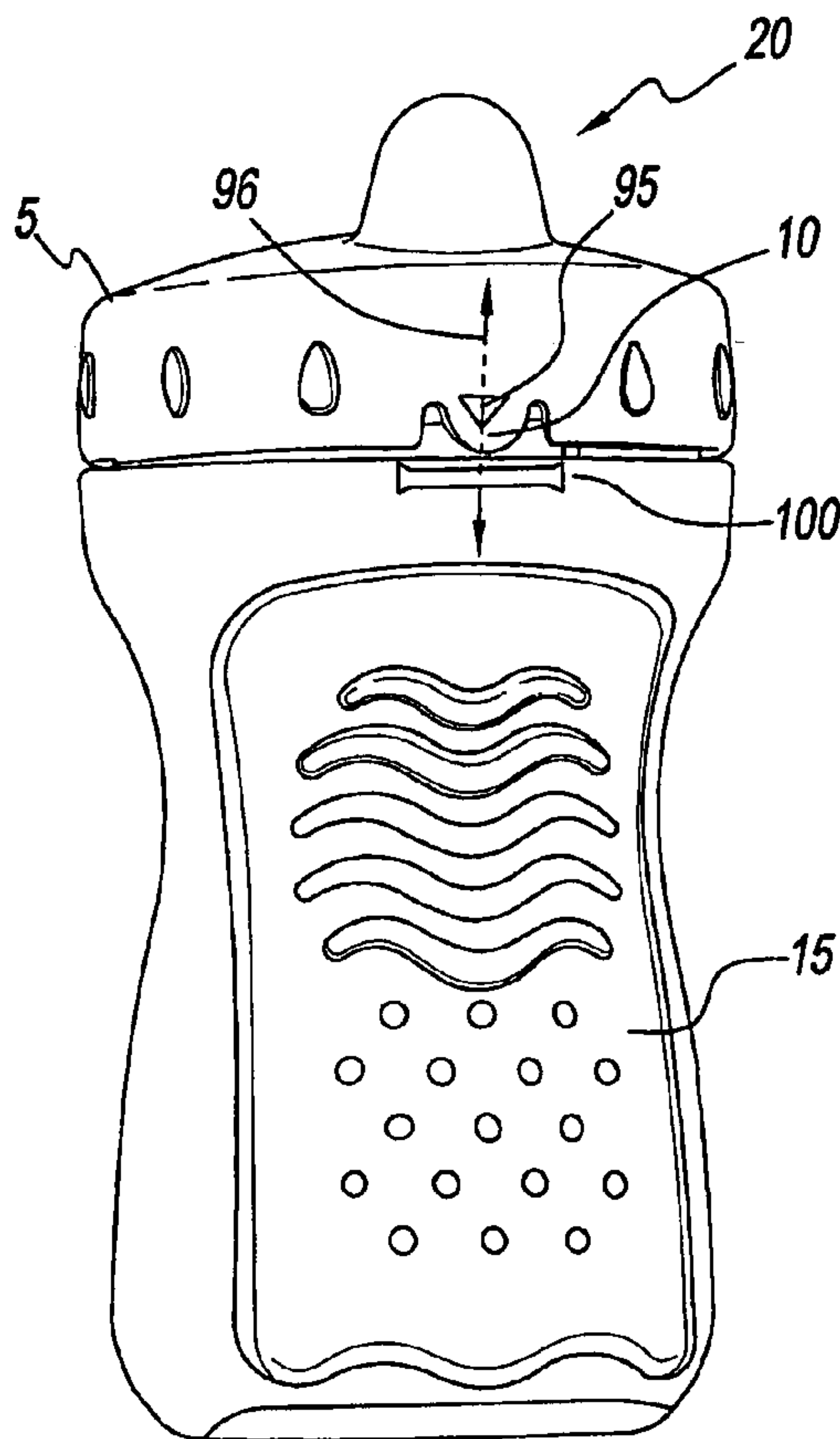
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(54) Title: SEAL INDICATION MECHANISM FOR CONTAINERS

**Fig. 1**

(57) Abstract: A seal indication mechanism for a container assembly having a container and a lid is provided. The seal indication mechanism has a portion on the container and a portion on the lid that interface to indicate to a user that a seal has been achieved between the container and the lid. The seal indication mechanism provides an audible, tactile and visual indication to the user that the lid and container are sealed. The seal indication mechanism functions to indicate a range of sealed relative positions between the container and the lid throughout the usable life of the container assembly.



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SEAL INDICATION MECHANISM FOR CONTAINERS

BACKGROUD OF THE INVENTION

5 1. Field of the Invention

The present disclosure relates generally to a seal indication mechanism for a lid and container assembly. More particularly, the present disclosure relates to a seal indication mechanism for a lid and container assembly with interfacing components on the lid and the container. Still more particularly, the present disclosure relates to a seal
10 indication mechanism for a lid and container assembly with interfacing components on the lid and the container that provide an audible, tactile and visual indication that the lid and container are sealed.

2. Description of Related Art

Consumers sometimes have containers that leak or spill even though they may be
15 leak or spill-proof containers. The tendency for containers to leak is generally caused by misuse. When a container thread design requires more than one turn, users are likely to stop turning the lid before a proper seal is created between the lid and container. Accordingly, there is a need for a container and lid design that provides for an indication to a user that a seal has been achieved between the lid and the container to prevent leaks
20 and spills.

SUMMARY OF THE INVENTION

The present disclosure provides for a seal indication mechanism disposed on a container and lid assembly that provides feedback to a user to indicate that the required torque to seal the container and lid assembly has been applied.

The present disclosure also provides for a seal indication mechanism for a container and lid assembly that is closed using mating threads on reciprocal surfaces thereof, to indicate that a seal has been achieved.

The present disclosure also provides for a seal indication mechanism disposed on a container and lid assembly that provides audible, tactile and visual feedback to the user after the required torque to seal the container and lid assembly has been applied.

The present disclosure further provides for a seal indication mechanism disposed on a container and lid assembly in which the container and lid each have at least one interfacing member thereon. After relative movement between the interfacing members, a seal is achieved. Further, visual indication is provided to the user that a seal has been achieved over a range of relative positions between the lid and the container.

The present disclosure yet further provides for a seal indication mechanism disposed on a lid and container assembly that indicates a range of sealed positions between the lid and the container.

The present disclosure still yet further provides for a seal indication mechanism disposed on a container and lid assembly in which the lid has a detent that interfaces with at least one rib on the container to provide an audible, visual and tactile indication to the user that a seal has been created between the lid and the container after movement of the detent over the rib.

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The present disclosure yet still further provides for a seal indication mechanism disposed on a container and lid assembly having a visual indication that there exists a seal between the container and the lid.

5 The present disclosure also provides for a seal indication mechanism disposed on a container and lid assembly that functions to compensate for changes in relative sealed positions between the lid and the container caused by usage.

A seal indication mechanism for a container assembly having a container and a lid is provided. The seal indication mechanism has a portion on the container and a portion on the lid that interface to indicate to a user that a seal has
10 been achieved between the container and the lid. The seal indication mechanism provides an audible, tactile and visual indication to the user that the lid and container are sealed. The seal indication mechanism functions to indicate a range of sealed relative positions between the container and the lid throughout the usable life of the container assembly.

15 A seal indication mechanism for an assembly having a container and a lid secured by mating threads is provided. The mechanism provides for a marking disposed in an outer surface of the lid and a marking disposed on a perimeter of the container. The marking on the lid has a centerline that intersects with the marking disposed on the perimeter of the container during relative movement between the lid
20 and the container to provide a visible indication of a sealed relationship between the lid and the container.

According to one aspect of the present invention, there is provided a seal indication mechanism to inhibit liquid leaks from an assembly having a container and a lid secured by mating threads, the mating threads comprise external threads on
25 the container and internal threads on the lid, said seal indicator comprising: a detent disposed proximal the internal threads on the lid; and at least one rib disposed on a perimeter of the container; wherein movement of said detent has a sliding movement over said at least one rib during relative rotational movement between the lid and the

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container and creates resistance and a tactile indication that the lid and the container are in a sealed relationship to inhibit liquid from leaking from the assembly, wherein the seal indicator further provides a visual indication that the lid and container are in a sealed relationship.

5 According to another aspect of the present invention, there is provided a seal indication mechanism to prevent liquid leaks from a cup assembly having a cup and a lid secured by mating threads, said mating threads comprise external helical threads on said cup and internal threads on said lid, said seal indicator comprising: a detent disposed proximal said internal threads on said lid; and at least one rib disposed on a
10 perimeter of said cup; wherein said detent has a sliding movement over said at least one rib during a relative rotational movement between said lid and said cup in a first direction and creates a resistance and a tactile indication that said lid and said cup are in a sealed relationship to prevent liquid from leaking from said assembly while allowing liquid to be withdrawn from a port in said lid, wherein said detent is tapered in a radial direction
15 towards a central axis of said cup, and wherein after a sealed relationship is obtained, said relative rotational movement between said lid and said cup in a second direction causes said detent to have said sliding movement over said at least one rib and disconnect said cup.

 According to still another aspect of the present invention, there is
20 provided a seal indication mechanism for a cup assembly having a cup and a lid secured by mating threads, said mating threads comprise external helical threads on said cup and internal threads on said lid, said seal indicator comprising: a tab disposed on said lid, the tab comprising a detent disposed proximal said internal threads on the lid-and a tab marking on an outer surface; and at least one rib
25 disposed on a perimeter of said cup, wherein after movement between said mating threads, said detent moves over said at least one rib during a relative rotational movement between said lid and said cup in a first direction that creates a resistance and provides a visual indication that said lid and said cup are in a sealed relationship to prevent liquid from leaking from said assembly while allowing liquid to be
30 withdrawn from a port in said lid, wherein said detent is tapered in a radial direction

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towards a central axis of said cup, and wherein after a sealed relationship is obtained, said relative rotational movement between said lid and said cup in a second direction causes said detent to have said sliding movement over said at least one rib and disconnect said cup.

- 5 According to yet another aspect of the present invention, there is provided a cup assembly, comprising: a cup for holding a liquid and having an upper portion with a first helical thread; a lid for covering the cup and having an inner surface that is exposed to the liquid and maintains the liquid in the cup, the lid including a port that, in response to a suction force being applied to the cup assembly by a user, permits the flow of the
- 10 liquid to flow out of the cup assembly via the port, the lid includes a second thread for mating engagement with the first helical thread, the first helical thread and the second thread provide an adequate seal between the lid and the cup in response to a relative rotational movement between the lid and the cup; and a seal indication mechanism including a tab disposed on the lid and a rib disposed on the cup, wherein the tab
- 15 moves over the rib in response to the relative rotational movement in a first direction that creates a resistance and creates an audible feedback, the resistance and the audible feedback indicating that the lid and the cup are adequately sealed so as to permit a user to withdraw the liquid from the cup assembly via suction force on the port without leakage between the lid and the cup, wherein the seal indication mechanism
- 20 has a predetermined range of sealing positions such that the adequate seal is achievable over a useful life of the assembly with the relative rotational movement, and wherein the tab includes a detent disposed on an inner surface of the tab, wherein said detent is tapered in a radial direction towards a central axis of said cup, and wherein after a sealed relationship is obtained, said relative rotational movement between said
- 25 lid and said cup in a second direction causes said detent to have said sliding movement over said at least one rib and disconnect said cup.

BRIEF DESCRIPTION OF THE DRAWINGS

Other and further benefits, advantages and features of the present disclosure will be understood by reference to the following specification in

conjunction with the accompanying drawings, in which like reference characters denote like elements of structure.

Fig. 1 illustrates a perspective view of the a seal indication mechanism
5 disposed on a cup and lid assembly, according to a first embodiment of the present disclosure;

Fig. 2 illustrates a bottom perspective view of the lid Fig. 1 showing the detent of the seal indication mechanism of the present disclosure;

10 Fig 3. illustrates a section view of the lid of Fig. 2 according to the present disclosure, shown along line 3-3;

Fig. 4 illustrates a bottom view of the lid of Fig. 2 showing the detent of the
15 seal indication mechanism;

Fig. 5 illustrates a front view of the cup of Fig. 1 showing the rib of the seal indication mechanism;

20 Fig, 6 illustrates a top view of the cup of Fig. 1 showing the rib of the seal indication mechanism;

Fig. 7 illustrates a front view of the cup according to a second embodiment of the seal indication mechanism having two ribs;

25 Fig, 8 illustrates a top view of the cup of Fig. 7 showing the second embodiment of the seal indication mechanism having two ribs;

Fig. 9 illustrates the seal indication mechanism disposed on a bowl and lid
30 assembly;

Fig. 10 illustrates a third embodiment of a seal indication mechanism disposed on a container according to the present disclosure; and

Fig. 11 illustrates the third embodiment of the seal indication mechanism disposed on a cup and lid assembly in a sealed relationship between the cup and lid.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the figures and in particular to Fig. 1, a seal indication mechanism for a container and lid assembly of the present disclosure is shown, and generally referenced by reference numeral 10. Seal indication mechanism 10 is disposed on a container and lid assembly such as a cup and lid assembly 20 according to a first embodiment of the present invention. Cup and lid assembly 20 has a cup 15 and lid 5. Lid 5 is shown as having a spout; however, lid 5 could also be configured to receive a straw.

Referring to Figs. 1, 2 and 5, seal indication mechanism 10 is a two-part mechanism having interfacing components on cup 15 and lid 5. Seal indication mechanism 10 has a portion on lid 5 that is tab 30 having a detent 35. Seal indication mechanism 10 has second portion, namely a rib 46, that is disposed on annular lip 90 or perimeter of cup 15. Detent 35 and rib 46 on cup 15 are integrally molded. Additionally, marking 95 on lid 5 and marking 100 on cup 15 provide further indication that a seal between lid 5 and cup 15 is achieved.

Lid 5 has threads 40 on an internal surface 22 thereof. Cup 15 has threads 25 on an annular lip 90 that mate with threads 40. Lid 5 and cup 15 are rotated together in a traditional fashion to have a mating relationship, as shown in Fig. 1, to seal cup and lid assembly 20 to prevent spilling or leakage of contents.

Referring to Figs. 2 and 3, lid 5 has two channels 50 that are disposed on opposite sides of tab 30. Internal surface 22 has an annular step 55 that has an upper portion 60 and a lower portion 65. Upper portion 60 is spaced from lower portion 65 by approximately 0.04 inches. Step 55 is molded on the inner surface of lid 5, to ensure that detent 35 will not interfere with threads 25 as user assembles cup and lid assembly 20. Tab 30 has recesses 70 that are on opposite sides of detent 35. Recesses 70 each have an upper ridge 72 that is contiguous with upper portion 60 of annular step 55. Detent 35 is perpendicular with respect to upper ridge 72 of recesses 70. Referring to Fig. 4, detent 35 has a trapezoidal shape. Facing surface 75 of detent 35 has a width of approximately 0.04 inches. Detent 35 has a base 80 having a width of approximately 0.08 inches. The sides 85 of detent are each at an angle of approximately 15 degrees relative to a center line of detent 35.

Referring to Figs. 5 and 6, cup 15 has a rib positioned on annular lip 90. Rib 46 is radially positioned on the perimeter of cup 15 as measured from a vertical axis of cup 15. Rib 46 has a radius against annular lip 90 on which threads 25 are disposed. The radius on rib 46 and the angled sides 85 of detent 35 permit movement of detent 35 over rib 46 while minimizing wear.

Rib 46 is molded at a predetermined position on annular lip 90. After the relative movement of detent 35 over rib 46, a sealed position between lid 5 and cup 15 exists. Additionally, marking 95, an arrow, on lid 5, points between marking 100 shown as a line 102 between arrow edge 101 and arrow edge 103 on cup 15 to provide further indication that a seal between lid 5 and cup 15 exists. Specifically, vertical centerline 96 through marking 95 intersects marking 100 to indicate a range of sealed positions between lid 5 and cup 15 as shown in Fig. 1. Thus, after movement of detent 35 over rib 46, a seal exists to cover a range of relative positions of sealing of cup and lid assembly 20.

Referring to Figs. 7 and 8, a second embodiment of seal indication mechanism 10 is shown. Cup 15 has two ribs positioned on annular lip 90. Rib 45 and rib 46 are radially spaced from approximately 10 to 15 degrees around the perimeter of cup 10 as measured from a vertical axis of cup 15. Positioned
5 between rib 45 and rib 46 is a surface 47 having a width of approximately 0.06 inches. Surface 47 permits detent 35 to rest between ribs 45 and 46. While cup 15 shows two ribs, cup 10 could have as many as four ribs. Thus, cup 10 is functional with at least one rib or with a plurality of ribs positioned as shown in Figs. 7 and 8. Rib 45 and rib 46 each has a radius against annular lip 90 on
10 which threads 25 are disposed. The radius on ribs 45 and 46 and the angled sides 85 of detent 35 permit movement of detent 35 over each rib while minimizing wear.

Rib 45 and rib 46 are molded at a predetermined position on annular lip
15 90. After the relative movement of detent 35 over rib 45 and rib 46, a sealed position between lid 5 and cup 15 exists. Additionally, marking 95, an arrow, on lid 5, points between marking 100 shown as a line 102 between arrow edge 101 and arrow edge 103 on cup 15 to provide further indication that a seal between lid 5 and cup 15 exists. Specifically, vertical centerline 96 through marking 95
20 intersects marking 100 to indicate a range of sealed positions between lid 5 and cup 15 as shown in Fig. 1. Thus, after movement of detent 35 over ribs 45 and 46, a seal exists to cover a range of relative positions of sealing of cup and lid assembly 20.

Referring to the first embodiment of Figs. 5 and 6, the positions of rib 46
25 on cup 15 and detent 35 are placed after determining the location at which a seal is achieved in cup and lid assembly 10. Rib 46 and detent 35 are positioned accordingly on the cup 15 and lid 5, respectively. Thus, a seal is achieved over a range of relative lid 5 and cup 15 positions after detent 35 passes over rib 46.
30 Similarly, with regard to the second embodiment of Figs 7 and 8, a seal is achieved after detent 35 passes over rib 45 and 46.

Further, rib 46 and detent 35, on cup 15 and lid 5, respectively, are positioned to maintain a seal between lid 5 and cup 15 throughout the usable life of lid and cup assembly 20. During the lifetime of cup and lid assembly 20, fatigue is caused by repeated washings that involve numerous heating cycles and detergents. Fatigue is also caused during use by numerous rotations for closing and opening of assembly 10 that may often be excessive. This fatigue and wear on cup 15 and lid 5 results in a shift of the relative position between lid and cup at which a seal will be created. The relative shift caused by this use is accommodated by the placement of marking 100 on cup. The location of marking 100 represents a predetermined range of sealed positions based upon the shift of the relative sealing positions between lid 5 and cup 15 when a predetermined amount of force is used to close cup and lid assembly 20.

The predetermined range of sealing positions was identified by estimating that approximately 25 inch-pounds (in-lbs) of torque would be required by a user to seal cup and lid assembly 20. Arrow edge 101 was initially placed at that location representing 25 in-lbs. Then after every five successive washing cycles, the cup and lid assembly 20 was closed using the same amount of torque. With the same amount of torque being applied to seal cup and lid assembly 20, a range of relative positions of sealing were recorded. Marking 100 was placed in the range of sealing positions. Marking 100 begins with arrow edge 101 and ends with arrow edge 103. Rib 46 was positioned immediately in front of arrow end 101.

In operation, lid 5 and cup 15 are rotated relative to each other to close lid assembly 20, as shown at Fig. 7. Rib 46 does not interface with threads 40 as the user cup 15 and lid 5 are assembled. Similarly, detent 35 does not interfere with threads 25. During rotation, and after an application of a predetermined amount of force, detent 35 of lid 5 moves over rib 46. The amount of torque that is required to move detent 35 over rib 46 to marking 100 is approximately 25 in-lbs of force. This amount of force will ensure that the seal is achieved.

The user of the lid and cup assembly 10 will know that a seal is achieved in three ways. First, the user will feel resistance as detent 35 slides over rib 46. The instance of resistance will provide a tactile indication that a seal exists.

5 Second, the user will hear the contact of detent 35 against cup 15 after it comes to rest after moving over rib 46 against annular rim 90 of cup. Third, the user can visually observe that a seal has been achieved by observing that marking 95 on lid 5 shaped as a downward pointing arrow, coincident with vertical centerline 96, points between arrow edge 101 and arrow edge 103 of marking 100 on cup 15.

10 When lid marking 95 points between arrows, the user will know that a seal exists between lid 5 and cup 15. Thus, there are three types of ways by which a user is assured that a seal has been achieved. While the amount of force to move detent 35 to first arrow end 101 is approximately 25 in-lbs, the amount of force to move detent 35 past to arrow edge 103 is from 35 to 40 in-lbs. As the user

15 tightens the lid, greater torque is required to turn the lid 5.

Referring to Fig. 9, seal indication mechanism 10 is shown on a bowl and lid assembly 110. Seal indication mechanism 10 on bowl and lid assembly operates in the same fashion as seal indication mechanism of cup and lid

20 assembly 20 according to the first embodiment. Bowl and lid assembly 110 has a bowl 105 and a lid 115 that are connected by mating threads on opposing surfaces. Seal indication mechanism 10 of bowl and lid assembly 110 provides a visual, tactile and audible indication that a seal has been achieved after a predetermined amount of torque is applied. Bowl 115 and lid 105 each have

25 visual markings 100 and 95, thereon, respectively, to provide further visual indication that a seal has been achieved between bowl 115 and lid 105. Bowl and lid assembly 110 could also have a second rib 45, according to the second embodiment of the present invention.

30 In an third embodiment of sealing indication mechanism is shown in Figs. 10 and 11. Lid 5 has marking 95, an inverted arrow. Cup 15 has a sealing range

indicated by marking 130 as two arrows 102 and 104 with a series of dots 103 therebetween. In this embodiment, after detent 35 passes over rib 46, lid 5 is in the sealing range indicated by marker 130. When a centerline of marking 95 points between arrows 102 and 104 to series of dots 103 as seal is achieved. In this embodiment, an audible indication of sealing is provided by hearing an audible sound as detent 35 moves over rib 46. A tactile indication is provided as the user feels resistance as detent 35 moves over rib 46. A visual indication is provided by centerline of marking 95 pointing to series of dots 103 between arrows 102 and 104 on cup 15, identical to the embodiment of Fig. 1. The embodiment of Figs. 10 and 11, can be configured to incorporate two ribs 45 and 46 as shown in Fig. 7 and 8.

The cup and lid assembly 20 and bowl and lid assembly 110 are made from a material such as polypropylene or polyethylene or a similar hard plastic material appropriate for such purposes.

Seal indication mechanism 10 is shown for cup and lid assembly 20 and bowl and lid assembly 110; however, the disclosure has broad applicability to other types of lidded containers. Accordingly, seal indication mechanism 10 has broad applicability to a range of container and lid assemblies that have a threaded reciprocal relationship between the lid and container.

The present disclosure having been thus described with particular reference to the preferred forms thereof, it will be obvious that various changes and modifications may be made therein without departing from the spirit and scope of the present disclosure as defined in the disclosure and the claims.

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CLAIMS:

1. A seal indication mechanism to prevent liquid leaks from a cup assembly having a cup and a lid secured by mating threads, said mating threads comprise external helical threads on said cup and internal threads on said lid, said seal indicator comprising:

a detent disposed proximal said internal threads on said lid; and

at least one rib disposed on a perimeter of said cup;

wherein said detent has a sliding movement over said at least one rib during a relative rotational movement between said lid and said cup in a first direction and creates a resistance and a tactile indication that said lid and said cup are in a sealed relationship to prevent liquid from leaking from said assembly while allowing liquid to be withdrawn from a port in said lid, wherein said detent is tapered in a radial direction towards a central axis of said cup, and

wherein after a sealed relationship is obtained, said relative rotational movement between said lid and said cup in a second direction causes said detent to have said sliding movement over said at least one rib and disconnect said cup.

2. The seal indication mechanism of claim 1, wherein said sliding movement of said detent over said at least one rib provides an audible indication of said sealed relationship between said lid and said cup.

3. The seal indication mechanism of claim 1, further comprising a tab, wherein said detent is disposed on an inner surface of said tab; and a tab marking disposed on an outer surface of the tab, said marking having a centerline; and a cup marking on said cup, wherein after movement between mating threads and movement of said detent over said at least one rib, an intersection of said centerline and said cup marking is a visual indication that said sealed relationship exists between said lid and said cup,

wherein the seal indication mechanism has a predetermined range of-said sealed

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relationship such that said sealed relationship is achievable over a useful life said assembly with said relative rotational movement.

4. The seal indication mechanism of claim 3, wherein said intersection of said centerline of said tab marking and said cup marking represents said range of said sealed relationship between said lid and said cup.

5. The seal indication mechanism of claim 3, wherein said tab marking comprises an inverted arrow.

6. The seal indication mechanism of claim 3, wherein said cup marking comprises a horizontal line between arrow ends or a series of dots between arrows.

7. The seal indication mechanism of claim 1, wherein said at least one rib comprises two or more ribs.

8. The seal indication mechanism of claim 1, wherein said at least one rib has a longitudinal axis, and wherein said longitudinal axis is parallel to an axis of said cup.

9. The seal indication mechanism of claim 7, wherein said two or more ribs are radially disposed from about 10 degrees to about 15 degrees around said perimeter of said cup.

10. A seal indication mechanism for a cup assembly having a cup and a lid secured by mating threads, said mating threads comprise external helical threads on said cup and internal threads on said lid, said seal indicator comprising:

a tab disposed on said lid, the tab comprising a detent disposed proximal said internal threads on the lid-and a tab marking on an outer surface; and

at least one rib disposed on a perimeter of said cup,

wherein after movement between said mating threads, said detent moves over

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said at least one rib during a relative rotational movement between said lid and said cup in a first direction that creates a resistance and provides a visual indication that said lid and said cup are in a sealed relationship to prevent liquid from leaking from said assembly while allowing liquid to be withdrawn from a port in said lid,

wherein said detent is tapered in a radial direction towards a central axis of said cup, and

wherein after a sealed relationship is obtained, said relative rotational movement between said lid and said cup in a second direction causes said detent to have said sliding movement over said at least one rib and disconnect said cup.

11. The seal indication mechanism according to claim 10, wherein said marking has a centerline and said cup has a marking, and wherein after movement of said detent over said at least one rib an intersection of said cup and said marking on said cup is a visual indication that said sealed relationship exists between said lid and said cup, wherein said seal indication mechanism has a predetermined range of said sealed relationship such that said sealed relationship is achievable over a useful life of said assembly with said relative rotational movement.

12. The seal indication mechanism of claim 10, wherein movement of said detent over said at least one rib provides a tactile indication of a sealed relationship between said lid and said cup.

13. The seal indication mechanism of claim 10, wherein contact between said detent and said perimeter after movement of said detent over said at least one rib is an audible indication of said sealed relationship between said lid and said cup.

14. The seal indication mechanism of claim 10, wherein said lid and said cup comprise a hard plastic material, wherein said detent has angled sides and said rib forms a radius against a rim of said cup that permits said detent to move over said rib during said relative rotational movement between said lid and said cup, thereby

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producing a tactile indication of said sealed relationship between said lid and said cup.

15. The seal indication mechanism of claim 1, wherein the cup is made of a hard plastic so that fluid is discharged in response to a suction force applied by the user to the port.

16. The seal indication mechanism of claim 15, wherein said cup further comprises a straw that engages said port, and wherein said suction force is applied to said straw.

17. The seal indication mechanism of claim 15, wherein said port is a spout.

18. A cup assembly, comprising:

a cup for holding a liquid and having an upper portion with a first helical thread;

a lid for covering the cup and having an inner surface that is exposed to the liquid and maintains the liquid in the cup, the lid including a port that, in response to a suction force being applied to the cup assembly by a user, permits the flow of the liquid to flow out of the cup assembly via the port, the lid includes a second thread for mating engagement with the first helical thread, the first helical thread and the second thread provide an adequate seal between the lid and the cup in response to a relative rotational movement between the lid and the cup; and

a seal indication mechanism including a tab disposed on the lid and a rib disposed on the cup, wherein the tab moves over the rib in response to the relative rotational movement in a first direction that creates a resistance and creates an audible feedback, the resistance and the audible feedback indicating that the lid and the cup are adequately sealed so as to permit a user to withdraw the liquid from the cup assembly via suction force on the port without leakage between the lid and the cup,

wherein the seal indication mechanism has a predetermined range of sealing

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positions such that the adequate seal is achievable over a useful life of the assembly with the relative rotational movement, and wherein the tab includes a detent disposed on an inner surface of the tab, wherein said detent is tapered in a radial direction towards a central axis of said cup, and wherein after a sealed relationship is obtained, said relative rotational movement between said lid and said cup in a second direction causes said detent to have said sliding movement over said at least one rib and disconnect said cup.

19. The cup assembly of claim 18, wherein the lid has an outer surface with a lid marking disposed thereon, the lid marking having a centerline, and the cup having a cup marking thereon, and wherein after the relative rotational movement between the first helical thread and the second thread and movement of the detent over the rib, an intersection of the centerline and the cup marking is a visual indication the adequate seal has been achieved.

20. The cup assembly of claim 18, wherein the detent extends downwardly from the lid.

21. The cup assembly of claim 19, wherein the intersection of the centerline of the lid marking and the cup marking represents the range of sealing positions between the lid and the cup.

22. The cup assembly of claim 19, wherein the lid marking comprises an inverted arrow.

23. The cup assembly of claim 19, wherein the cup marking comprises a horizontal line between arrow ends or a series of dots between arrows.

24. The cup assembly of claim 18, wherein the rib has a longitudinal axis, and wherein the longitudinal axis is parallel to the central axis of the cup.

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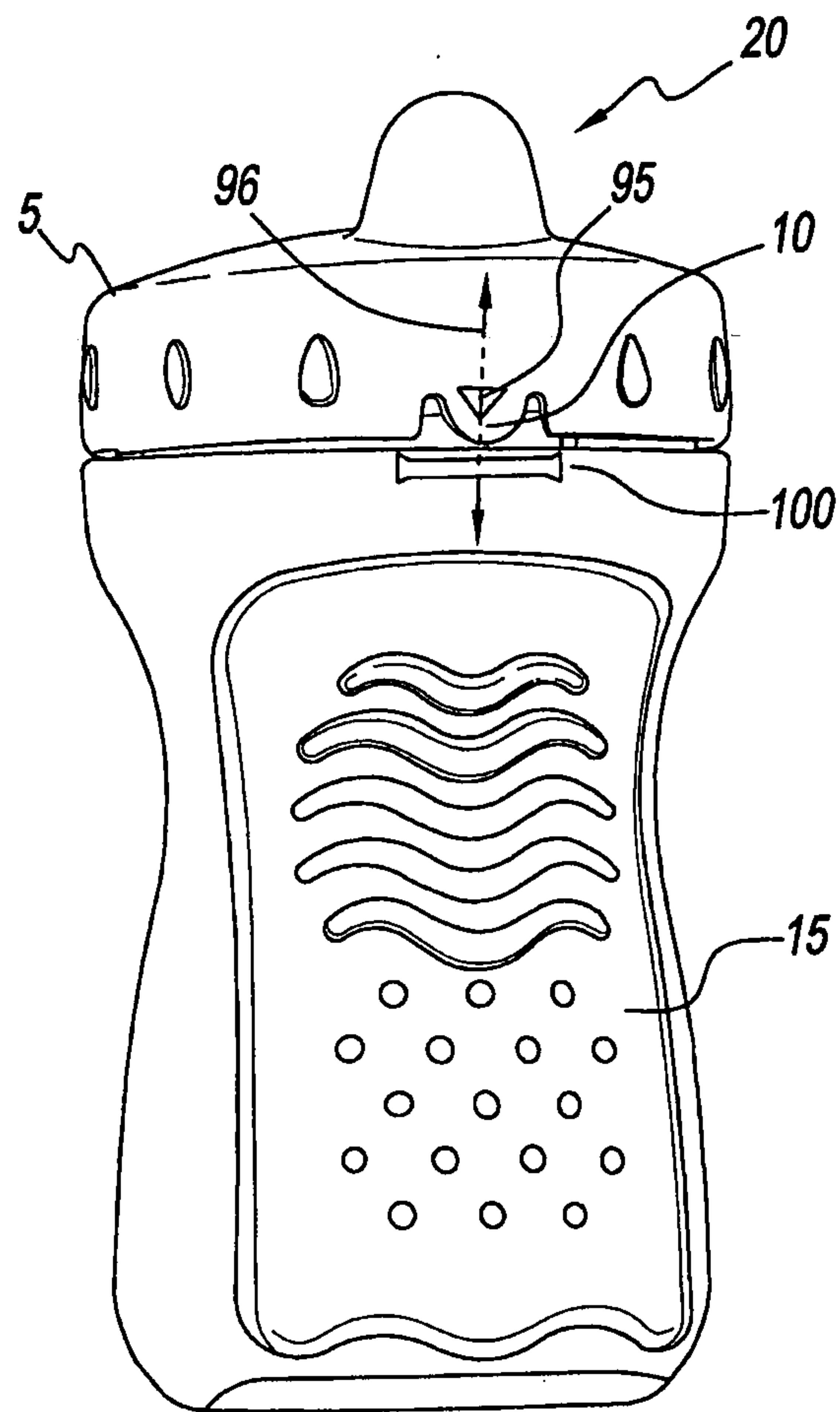
25. The cup assembly of claim 18, wherein the one rib comprises two or more ribs.

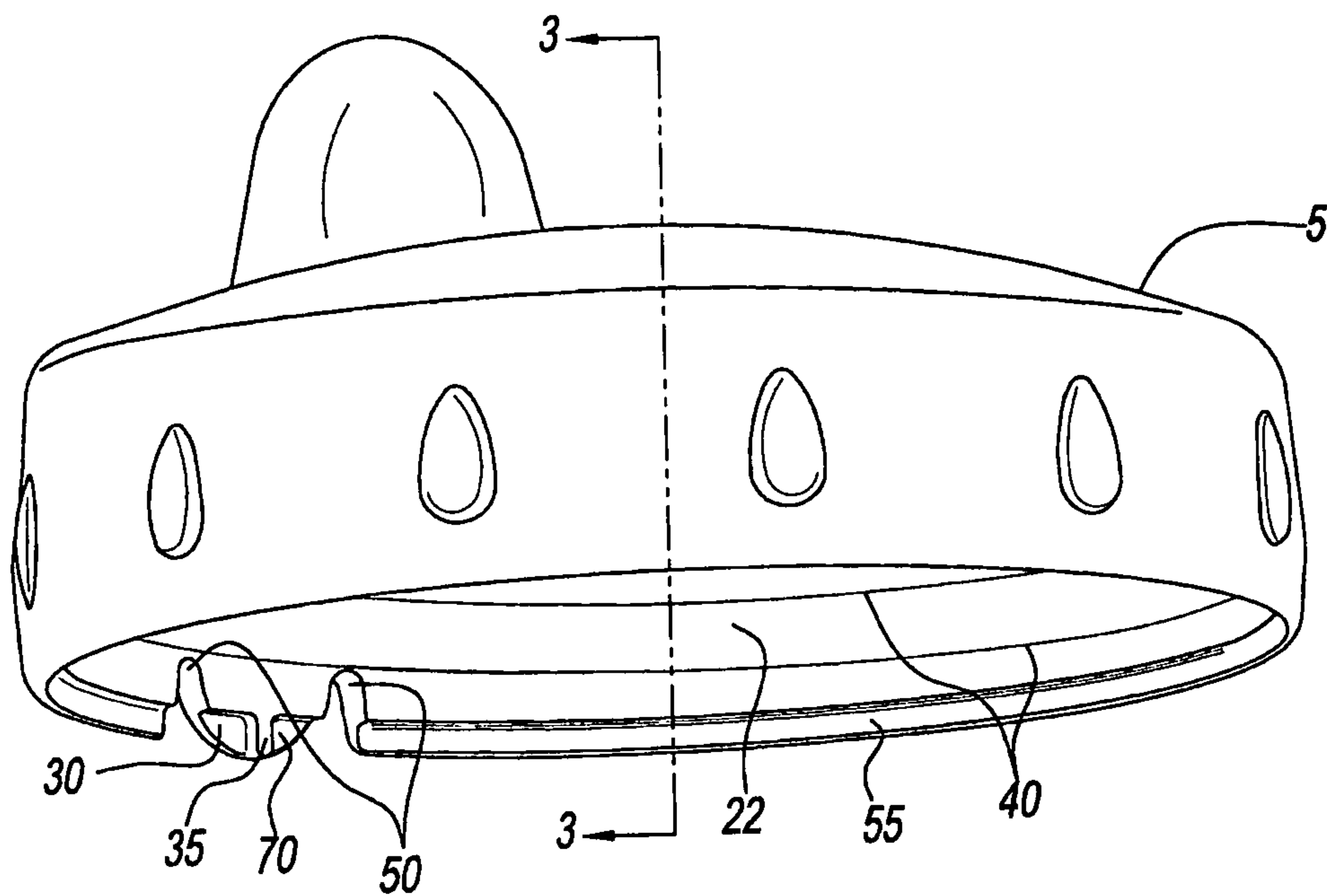
26. The cup assembly of claim 18, wherein movement of the detent over the one rib provides a tactile feedback, the tactile feedback indicating that the lid and the cup are adequately sealed so as to permit the user to withdraw the liquid from the cup assembly via the port without leakage between the lid and the cup.

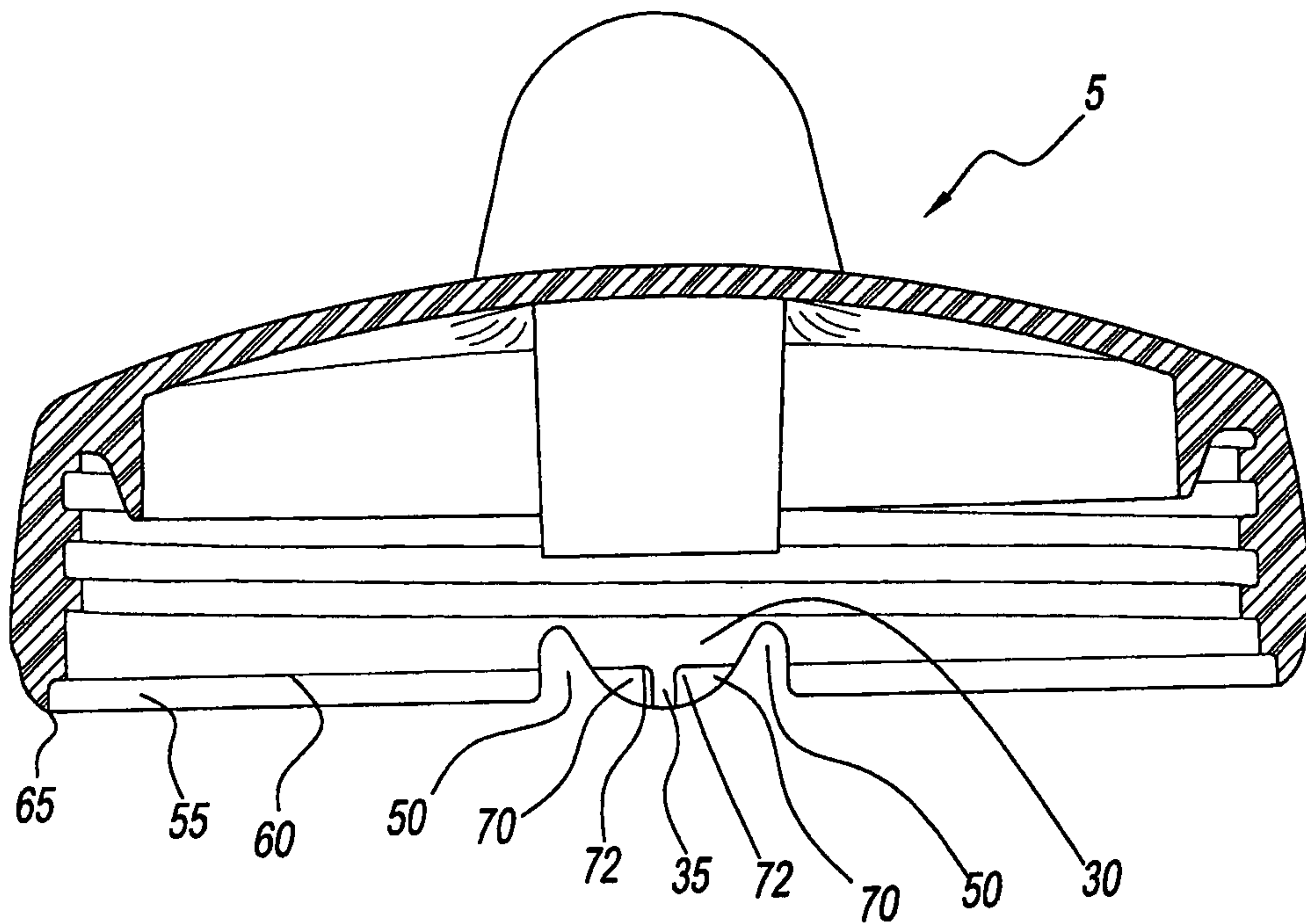
27. The cup assembly of claim 18, wherein the cup is made of a hard plastic so that fluid is discharged in response to a suction force applied by the user to the port on the lid.

28. The cup assembly of claim 27, wherein the cup comprises a straw that engages the port, wherein the user applies the suction force to the straw.

29. The cup assembly of claim 18, wherein the port is a spout.

*Fig. 1*

*Fig. 2*

*Fig. 3*

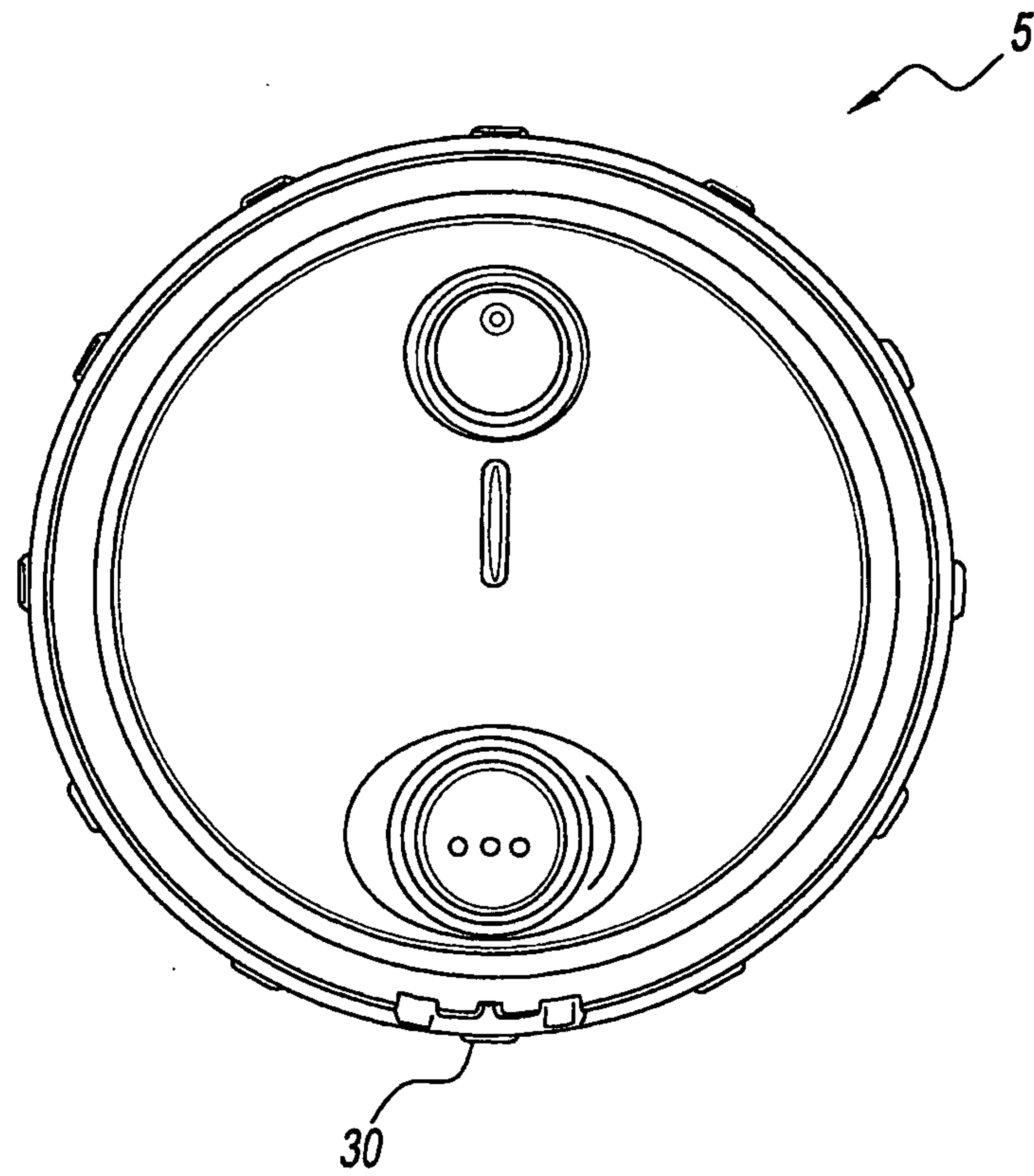
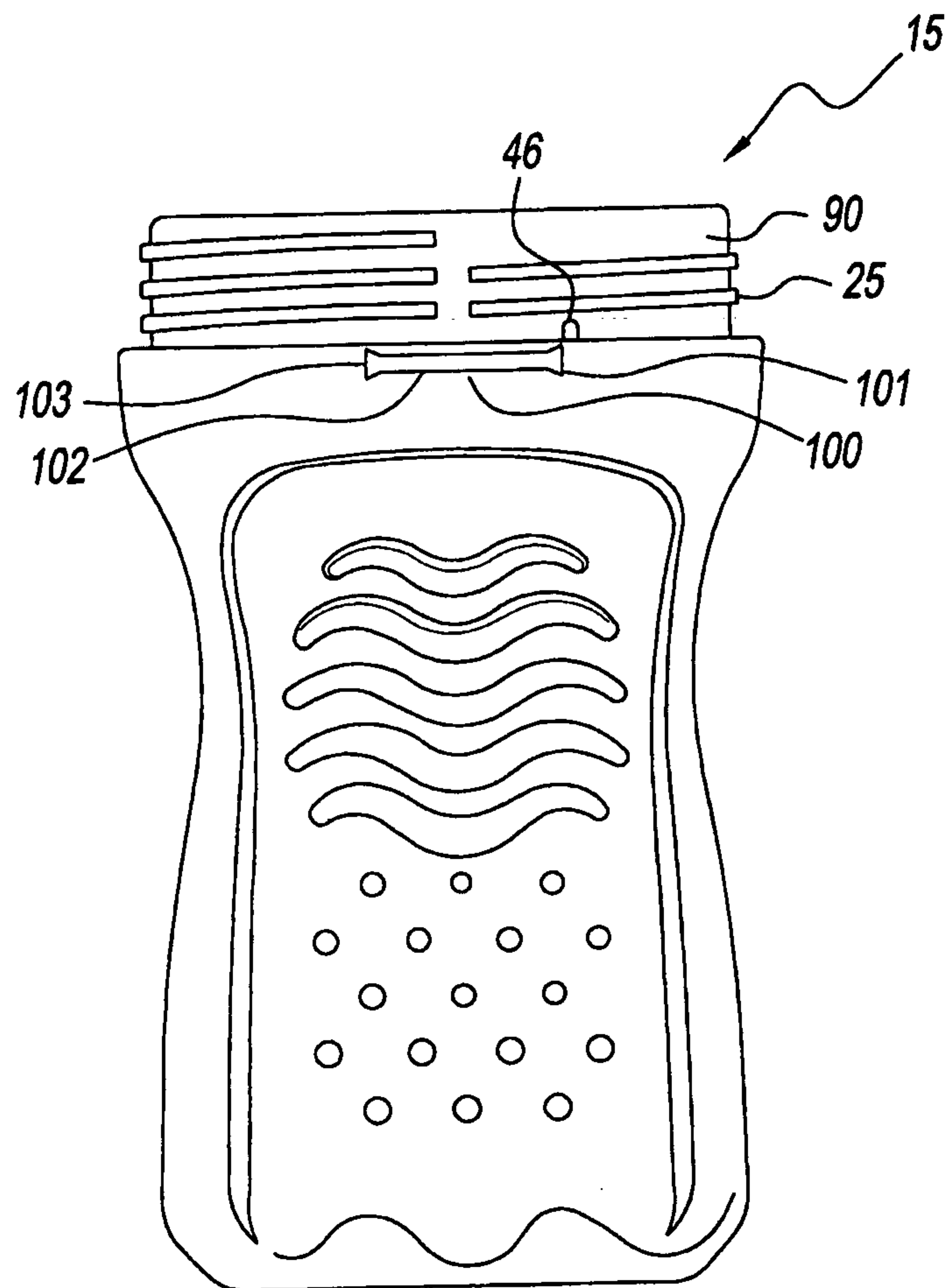
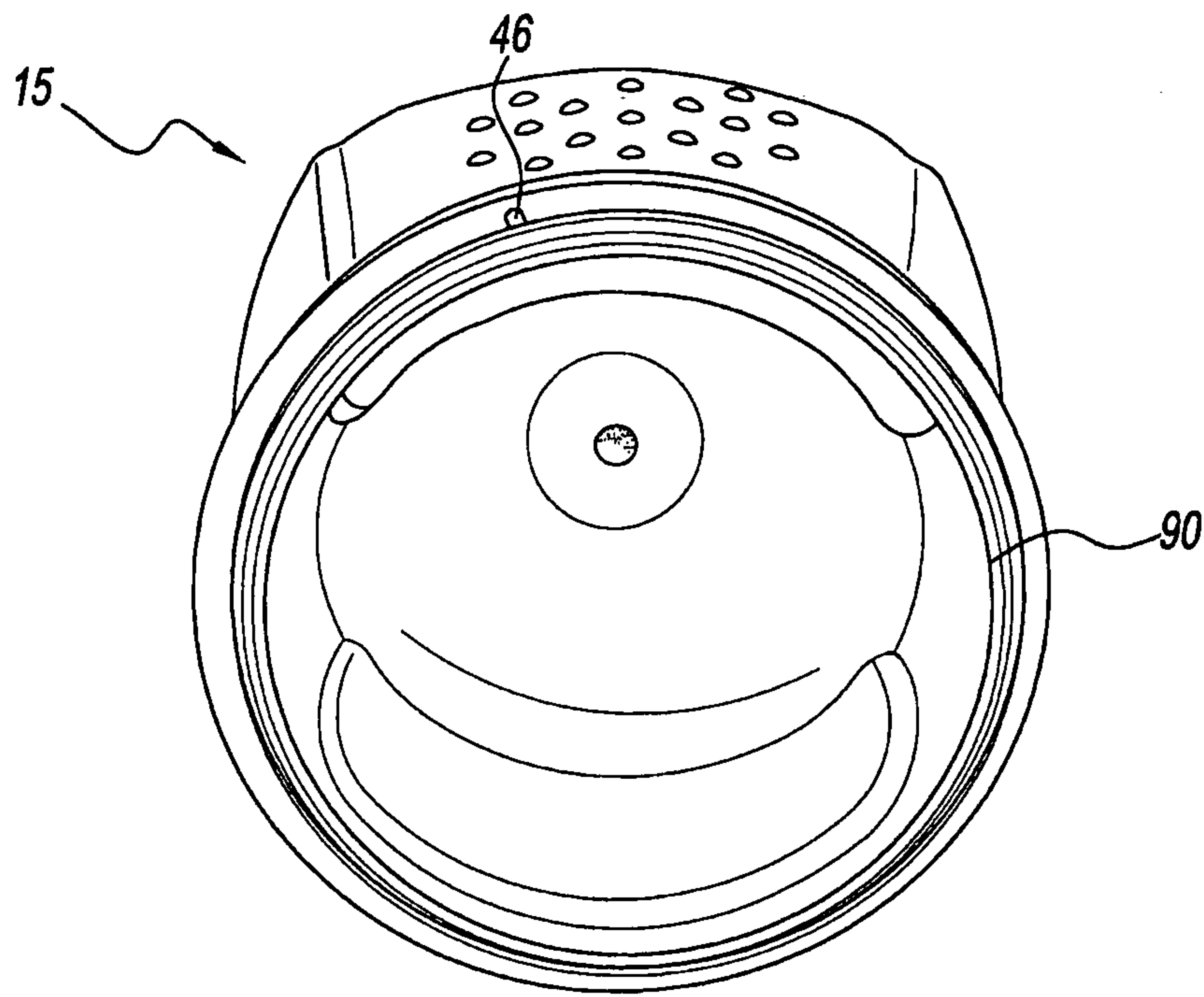
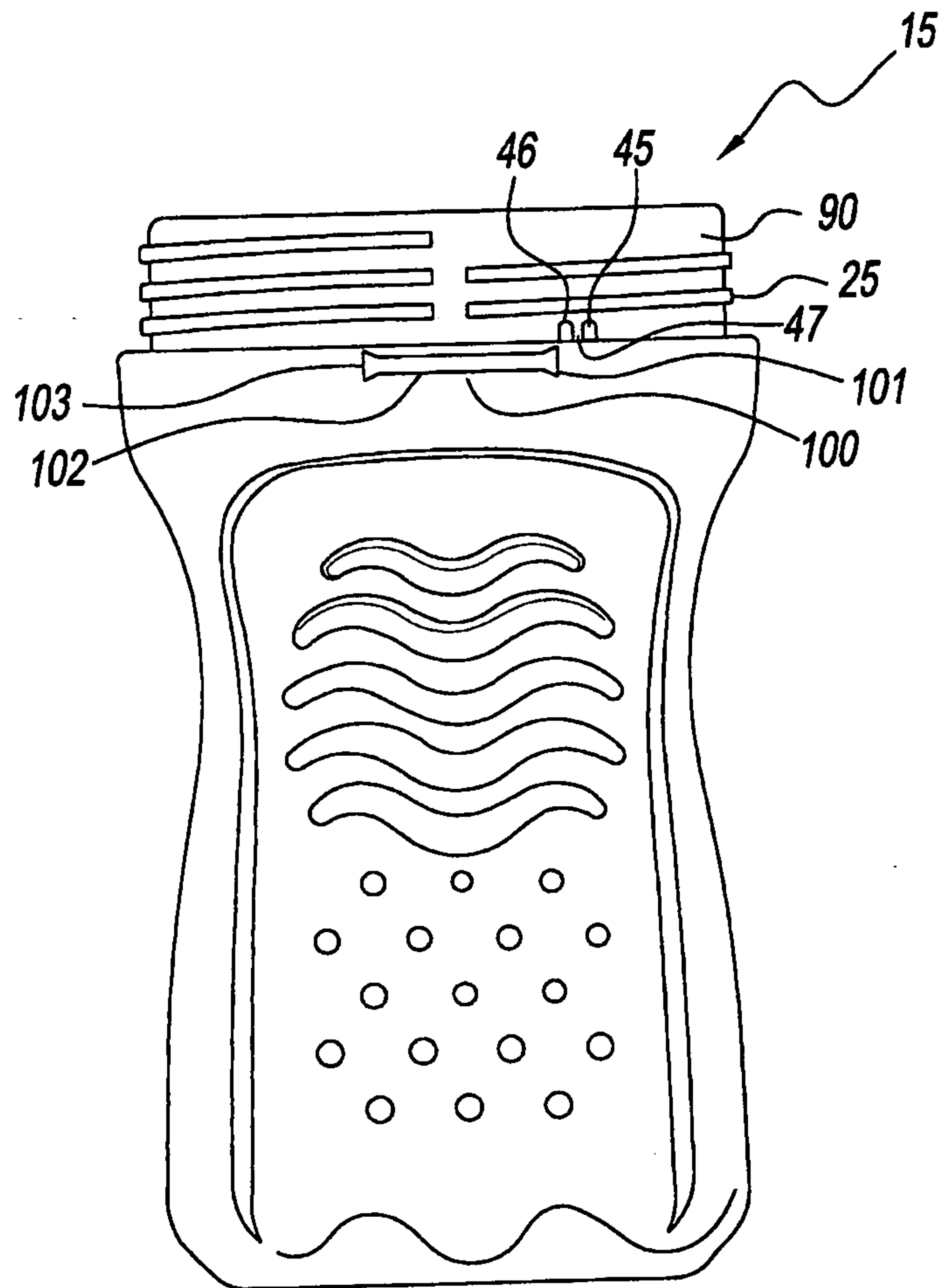
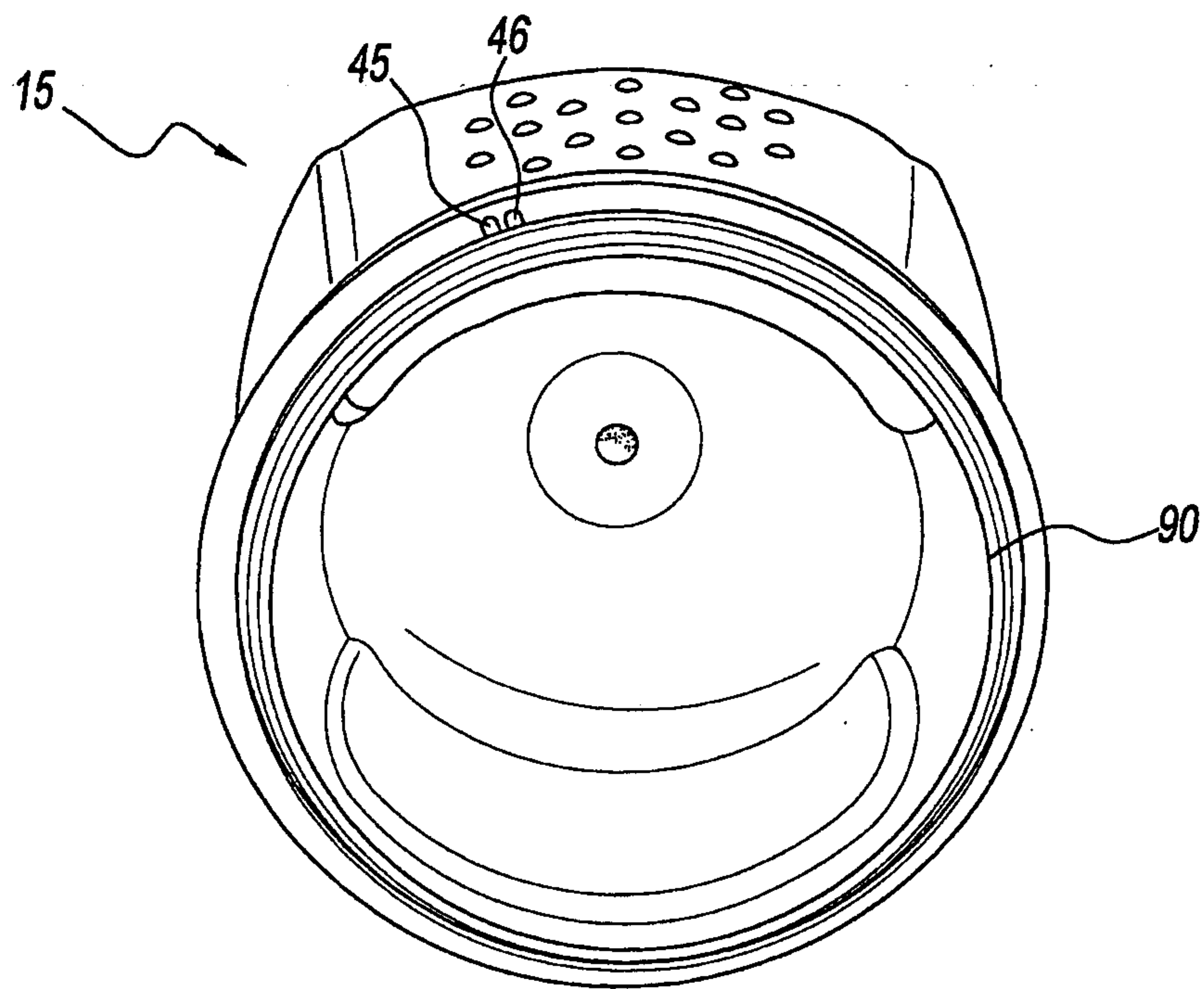


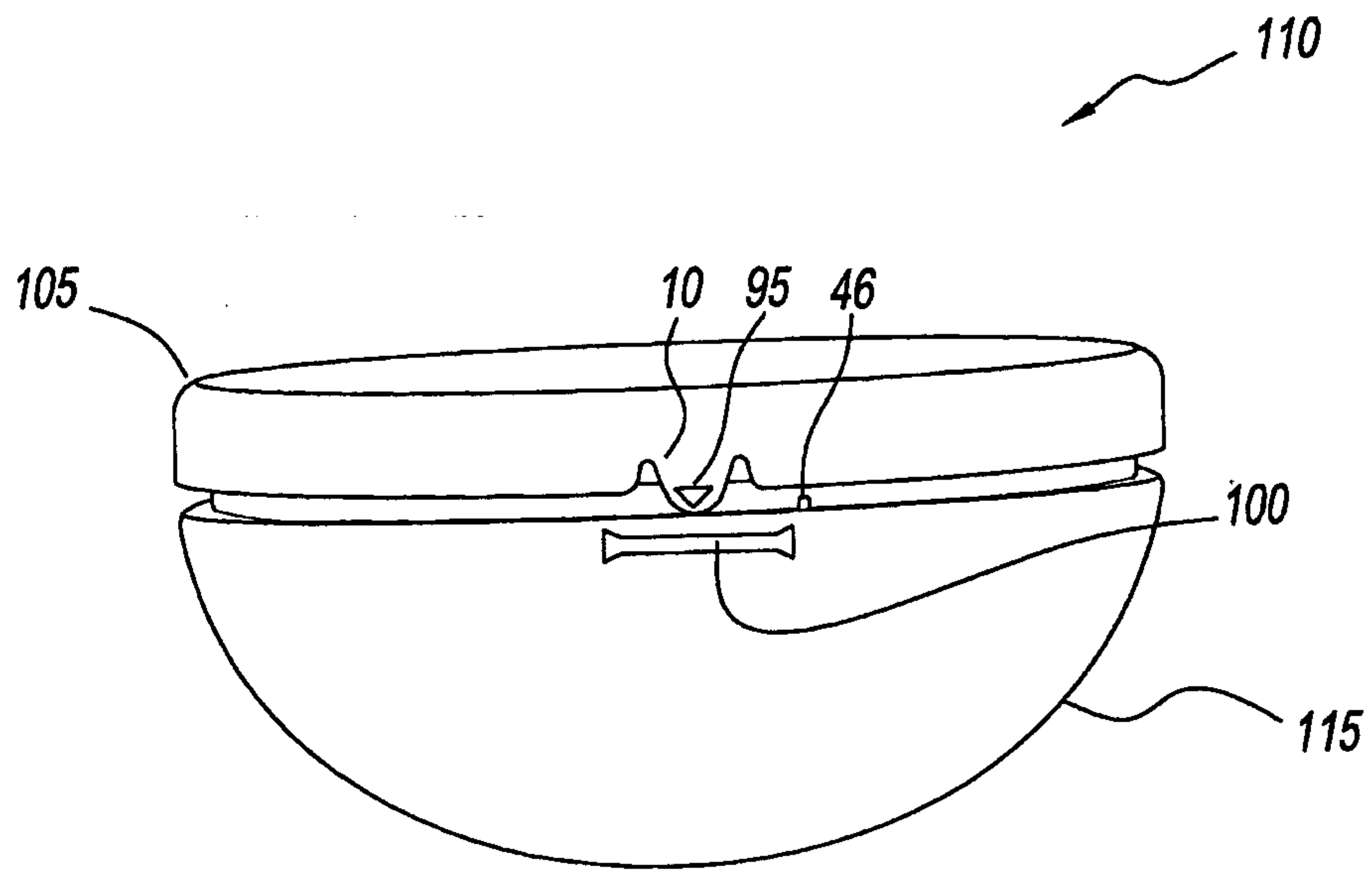
Fig. 4

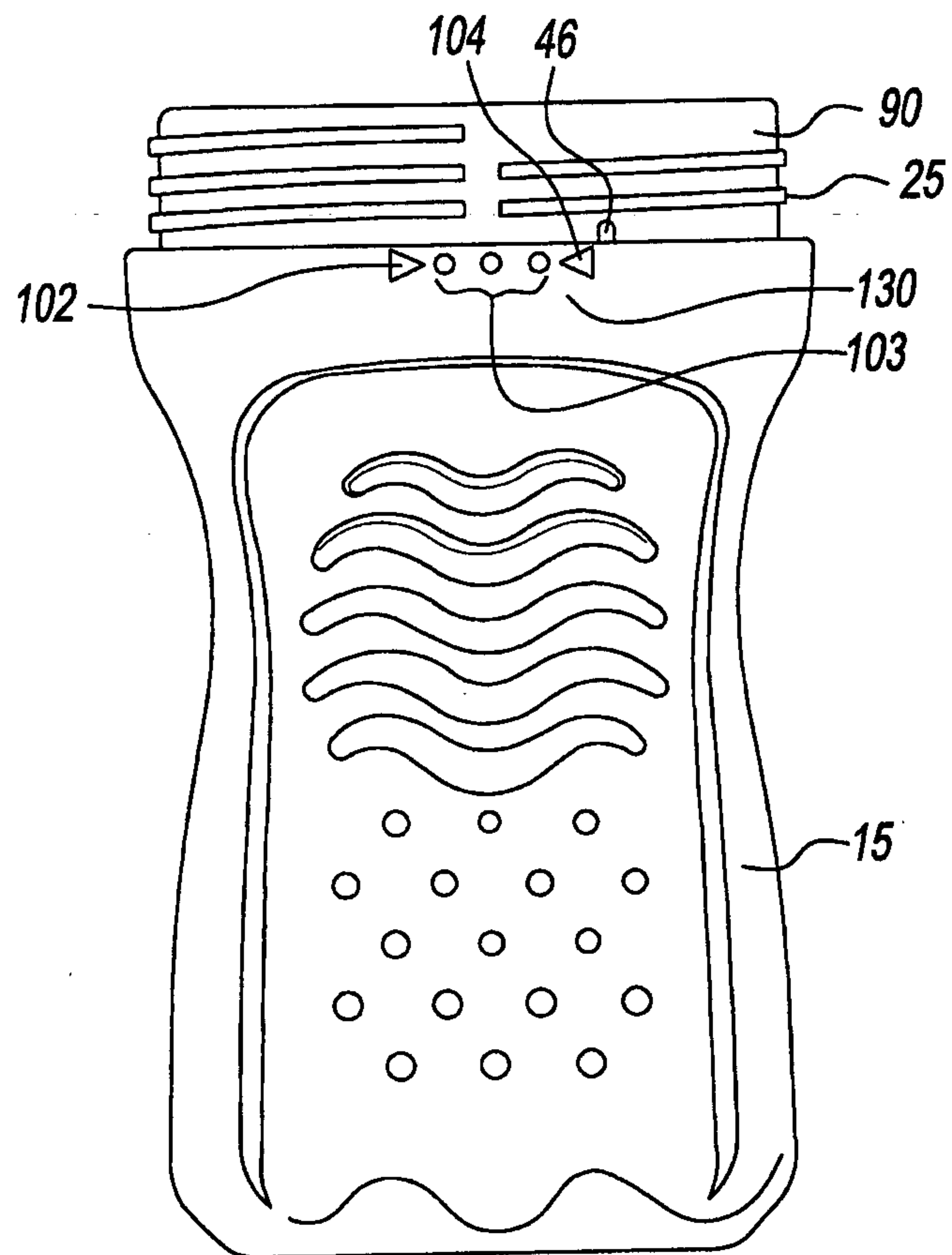
*Fig. 5*

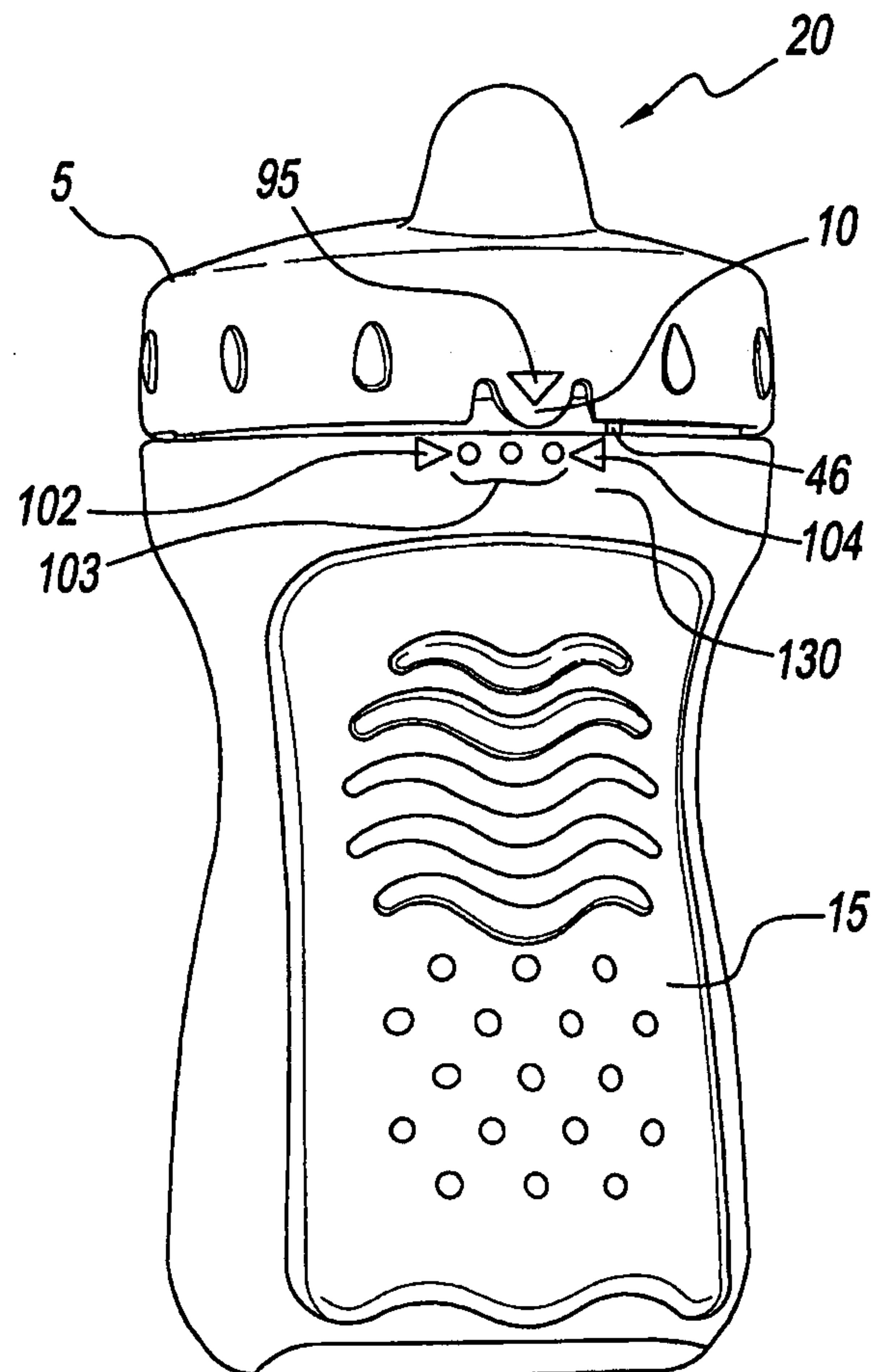
*Fig. 6*

*Fig. 7*

*Fig. 8*

*Fig. 9*

*Fig. 10*

*Fig. 11*

