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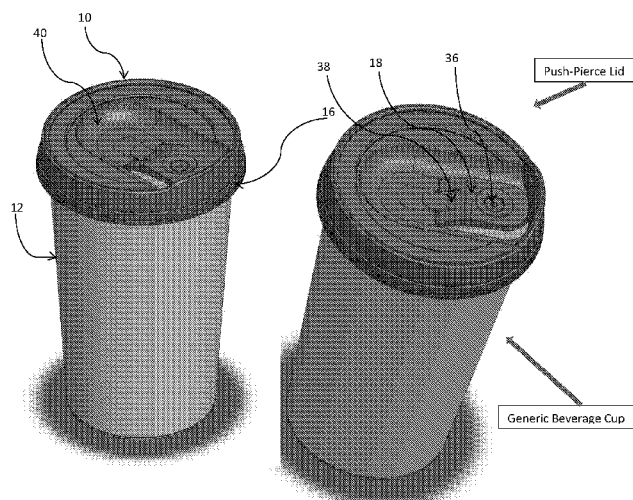
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(54) Title: LID FOR CONTAINER



(57) Abstract: A lid for a sealed container of a food or drink product to facilitate opening of the container for consumption by a consumer directly from the container, wherein the container has a seal; and the lid includes a coupling arranged for holding the lid to the sealed container, and a tab adapted to be pressed toward the container so as to pivot away from a surrounding portion of the lid, wherein the tab includes an abutment which, during pressing of the tab, abuts the seal of the sealed container and presses against the seal so as to initiate mechanical piercing of the seal.

Figure 8

- 1 -

LID FOR CONTAINER

FIELD OF THE INVENTION

5 This invention relates to a lid for a container. More particularly, but not exclusively, the invention relates to a drink-through or consume-through lid for a sealed container of a drink or food product to facilitate opening of the container for consumption directly from the container.

10 BACKGROUND OF THE INVENTION

It is known to provide sealed drink containers having a cup portion which is sealed by a foil or plastic membrane to keep the contents fresh. While containers of this type can be effective in maintaining the contents in a fresh condition, they can be
15 troublesome to open as the membrane must be peeled away from the container body which can occur abruptly so that there is spillage of the contents.

The applicant has determined that it would be advantageous to provide a container which has the benefit of maintaining the contents fresh in a sealed condition, but
20 which also provides convenient opening and comfortable consumption.

Examples of the present invention seek to avoid or at least ameliorate the disadvantages of existing sealed beverage containers.

25 SUMMARY OF THE INVENTION

A closure for a sealed container of a food or drink product to facilitate opening of the container for consumption by a consumer directly from the container, wherein
the container has a seal; and
30 the closure includes a coupling arranged for holding the closure to the sealed container, and a tab adapted to be pressed toward the container so as to pivot away from a surrounding portion of the closure, wherein the tab includes an abutment which, during pressing of the tab, abuts the seal of the sealed container and presses against the seal so as to initiate mechanical piercing of the seal.

35 Preferably, the closure includes frangible holding portions which, in an unused

- 2 -

condition, hold the tab relative to the surrounding portion of the closure and which, in a deployed condition, are broken to allow the tab to be pushed below the surrounding portion. More preferably, the frangible holding portions are adapted to break visually so as to act as a tamper evident indicator.

5

In a preferred form, the tab is pivotally movable between the unused and the deployed conditions about a hinge. More preferably, the closure is unitary in construction and the hinge is integrally formed in the unitary closure.

10 Preferably, the abutment is configured to concentrate force on a relatively small surface area of the seal. More preferably, the abutment is located centrally on an underside of the tab. Even more preferably, the abutment extends to a distal tip of the tab.

15 In a preferred form, the abutment includes a downwardly-facing point. More preferably, the abutment is in the form of a longitudinal ridge extending perpendicular to the hinge.

Preferably, the closure includes a perimetral lip for sealing against the mouth of a user. More preferably, the perimetral lip is in the form of a circular lip having a substantially planar upper edge.

20

The seal may be in the form of a membrane or film. More preferably, the seal is in the form of a foil membrane or a plastic induction-seal membrane.

25

Preferably, the closure includes locking protrusions which resiliently engage to hold the tab in the deployed condition relative to the surrounding portion of the closure. More preferably, the locking protrusions are mounted at opposed sides of the tab.

30 In a preferred form, the tab has an indentation on an upper surface thereof for receiving a finger or thumb of a user. More preferably, the protrusions are located between the indentation and the hinge.

It is preferred that the closure includes a well and the tab is located within the well.

35

Preferably, the tab is radial and a distal tip of the tab terminates near the perimetral lip.

- 3 -

In one form, the coupling is in the form of a resiliently deformable flange/shroud adapted to resiliently fit over a rim of the container.

Preferably, in the unused condition, the tab protrudes above the surrounding portion
5 of the closure. More preferably, in the deployed condition, the tab is at or below the surrounding portion of the closure.

BRIEF DESCRIPTION OF THE DRAWINGS

10 The invention is further described by way of non-limiting example only with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a container fitted with a lid in accordance with an example of the invention;

15

Figure 2 shows a top perspective view of the lid, as well as a cutaway view of the lid when fitted to a container, shown in an unused condition;

Figure 3 shows a top perspective view of the lid as well as a cutaway view of
20 the lid when fitted to a container, shown in a deployed condition;

Figure 4 shows a cross-sectional cutaway view of the lid when fitted to the container, shown in the deployed condition;

25 **Figure 5** shows top perspective views of the lid from two different angles, showing detail of frangible features;

Figure 6 shows a top perspective view of the lid shown in the unused condition as well as a top perspective view of the lid in the deployed condition, illustrating detail
30 of locking protrusions; and

Figure 7 shows a top perspective view of the lid when fitted to a container, shown in the unused condition;

35 **Figure 8** shows perspective views of a container fitted with a lid in accordance with an alternative example of the invention;

- 4 -

Figure 9 shows a top perspective view of the lid of Figure 8, as well a cutaway view of the lid when fitted to a container, shown in an unused condition;

5 **Figure 10** shows a top perspective view of the lid of Figure 8 as well as a cutaway view of the lid when fitted to a container, shown in a deployed condition;

Figure 11 shows a cross-sectional cutaway view of the lid of Figure 8 when fitted to the container, shown in the deployed condition;

10

Figure 12 shows top perspective views of the lid of Figure 8 from two different angles, showing detail of frangible features;

15 **Figure 13** shows a top perspective view of the lid of Figure 8 shown in the unused condition as well as a top perspective view of the lid in the deployed condition, and a cutaway view in the deployed condition, illustrating detail of a locking protrusion;

20 **Figure 14** shows a top perspective view of the lid of Figure 8, shown in the unused condition; and

Figure 15 shows top, bottom, left, right and front views of the lid of Figure 8, shown in the unused condition.

- 5 -

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to Figures 1 to 7 of the drawings, there is shown a lid 10 in accordance with an example of the present invention. Advantageously the lid 10 has a frangible
5 tab which is able to be pressed downwardly from the lid to initiate mechanical piercing of a seal membrane over a container to which the lid is fitted. Previously, it has been necessary to peel seal membranes from drink containers of this general type, however the applicant has identified that such removal of the seal membrane is often problematic and inconvenient. The sipper lid shown in the drawings includes features
10 which eliminate the need to remove a seal membrane from a pre-sealed beverage cup prior to dispensing/drinking the contents. This is achieved as the push/pierce mechanism is configured to receive pressure from a user's finger on the movable tab which then moves downwardly into contact with the seal membrane to initiate mechanical tearing of the seal membrane underneath.

15 More specifically, with reference to Figure 1, there is shown a lid 10 for a sealed container of a food or drink product to facilitate opening of the container 12 for consumption by a consumer directly from the container 12. The container 12 has a seal 14 (see Figures 2 to 4). The lid 10 includes a coupling 16 arranged for holding
20 the lid 10 to the sealed container 12, and a tab 18 adapted to be pressed toward the container 12 so as to pivot away from a surrounding portion 20 of the lid 10. The tab 18 includes an abutment 22 (see Figure 2) which, during pressing of the tab 18, abuts the seal 14 of the sealed container 12 and presses against the seal 14 so as to initiate mechanical piercing of the seal 14.

25 The lid 10 includes frangible holding portions 24 which, in an unused condition (see Figure 2), hold the tab 18 relative to the surrounding portion 20 of the lid 10 and which, in a deployed condition (see Figure 3), are broken to allow the tab 18 to be pushed below the surrounding portion 20. The frangible holding portions 24 are
30 adapted to break visually so as to act as a tamper evident indicator. As shown clearly in Figures 5 and 6, the tab 18 is pivotally movable between the unused and the deployed conditions about a hinge 26. In the example shown, the lid 10 is unitary in construction and the hinge 26 is integrally formed in the unitary lid 10.

35 Figures 2 and 3 show clearly the mechanical piercing of the seal 14 as the tab 18 is moved from the unused condition shown in Figure 2 to the deployed condition shown

- 6 -

in Figure 3. The abutment 22 is configured to concentrate force on a relatively small surface area of the seal 14. The abutment 22 is located centrally on an underside of the tab 18 and may extend to a distal tip 28 of the tab 18. The abutment 22 may include a downwardly-facing point 30 (see Figure 4). In an alternative form, the
5 abutment 22 may be in the form of a longitudinal ridge extending perpendicular to the hinge 26.

As shown in Figure 7, the lid 10 may include a perimetral lip 32 for sealing against the mouth of a user. The perimetral lip 32 may be in the form of a circular lip having a
10 substantially planar upper edge. Advantageously, as the edge of the lip 32 may be all on the same plane, this may facilitate for a membrane seal over the lid 10, if required.

The lid 10 includes locking protrusions 34 (see Figure 6) which resiliently engage to hold the tab 18 in the deployed condition relative to the surrounding portion 20 of the
15 lid 10. The locking protrusions 34 may be mounted at opposed sides of the tab 18, and the surrounding portion 20 of the lid 10 may be resiliently deformable so as to allow the locking protrusions 34 to move past and into the locking condition shown in the lower drawing of Figure 6. The seal 14 may be in the form of a membrane or film and, more specifically, a foil membrane or a plastic induction seal membrane. A
20 diagrammatic depiction of the seal 14 when mechanically pierced is shown in Figures 3 and 4.

The tab 18 may have an indentation 36 on an upper surface 38 thereof for receiving a finger or thumb of a user. The indentation 36 may assist with positively locating the
25 finger or thumb of the user so as not to slip on the tab 18 during opening. The locking protrusions 34 may be located between the indentation 36 and the hinge 26 to make use of mechanical advantage in the lever arm of the tab 18.

The lid 10 may include a well 40 with the tab 18 being located within the well 40. The
30 well 40 may provide a relieved area for the nose of the user when drinking. The well 40 may also be provided with a generally circular surrounding recess for vertical pack stacking. The tab 18 is generally radial of the lid 10 and a distal tip 28 of the tab 18 terminates near the perimetral lip 32.

35 The coupling 16 may be in the form of a resiliently deformable flange/shroud 42 adapted to resiliently fit over a rim of the container 12.

- 7 -

With reference to the upper and lower diagrams of Figure 6, in the unused condition, the tab 18 protrudes above the surrounding portion 20 of the lid 10 whereas, in the deployed condition, the tab 18 is at or below the surrounding portion 20 of the lid 10.

5

The locking protrusions 34 may be tapered outwardly into an upper platform to facilitate movement of the tab 18 past the surrounding portion 20 and to encourage secure locking of the tab in the deployed condition. Advantageously, the lid 10 may be arranged to be compatible with existing generic containers.

10

The push/pierce sipper lid with the push/pierce mechanism tab is designed to be moulded in plastic, and includes frangible sections designed to fail or break and to allow the tab to be folded inwards and clear of the drinking area of the lid. As will be appreciated from the above, the push/pierce mechanism tab also includes locking

15 protrusions (or "pips") which effectively keep the tab in the open (deployed) state allowing unhindered pouring or drinking from the lid. The push/pierce mechanism tab remains connected to the lid via the hinge so that even in the fully activated position the risk of breaking off the tab and it becoming a foreign matter hazard is eliminated/minimised.

20

Figures 8 to 15 show a lid 10 in accordance with an alternative example of the present invention. The lid 10 shown in Figures 8 to 15 is generally similar to the lid 10 of Figures 1 to 7, and like features are shown with like reference numerals. The main differences with the lid 10 of Figures 8 to 15 include that the frangible break feature is

25 in the form of a central frangible holding portion 24 which is located at a distal end of the tab along a central axis of the tab 18 which central axis is perpendicular to the hinge 26 about which the tab pivots. In an unused condition (see Figure 9), the frangible holding portion 24 holds the tab 18 relative to the surrounding portion 20 of the lid 10. In a deployed condition (see Figure 10), the frangible holding portion 24 is

30 broken to allow the tab 18 to be pushed below the surrounding portion 20.

The frangible holding portion 24 may be adapted to break visually so as to act as a tamper evident indicator. As shown clearly in Figures 12 and 13, the tab 18 is pivotally movable between the unused and the deployed conditions about the hinge

35 26. In the example shown, the lid 10 is unitary in construction and the hinge 26 is integrally formed in the unitary lid 10. Another difference with the lid 10 of Figures 8

- 8 -

to 15 is that the lid 10 includes a locking protrusion 34 having an over-centre arrangement across the hinge 26. The over-centre arrangement includes a first flap depending from the lid 10 and a second flap depending from the tab 18, the first flap being arranged to resiliently snap past the second flap as the tab 18 is hingedly
5 moved to the deployed condition, see detail in Figure 11. In the example depicted in Figures 8 to 15, the first and second flaps are centred along a central axis of the lid 10, which central axis extends along a centre of the tab 18 and perpendicular to the hinge 26. With reference to Figure 11, the second flap may have at its distal end a cam to assist with the second flap riding along an upper surface of the first flap as the
10 tab 18 is moved from the unused condition to the deployed condition. The first flap may also include a distal recess on an underside thereof for accommodating the distal tip of the second flap when the tab 18 is in the deployed condition.

The text appearing in the drawings shows that the lid may be referred to as a push-pierce lid (see Figure 8); the lid may be fitted to a generic beverage cup (see Figure 8); by applying downwards force with a finger of a user, the tab will initiate mechanical piercing of the seal membrane (see Figure 9); the push-pierce tab is designed to pierce through the planar seal membrane (see Figure 10); the frangible section of the tab is designed to fail or break offering both tamper-evidence and
20 feedback to the consumer that the tab is being activated (see Figure 12 in which the tab has pierced the foil in the upper drawing and in which the frangible feature is broken away in the lower drawing); there is a "stop" designed to effectively lock the tab in the activated or fully opened position (see upper drawing of Figure 13); the tab is locked in the activated position in the lower drawing of Figure 13.

25 Figure 14 shows the lid 10 includes a recess 44 for vertical pack stacking, a relieved area 46 for the nose of the user when drinking, a stop feature to lock the activated tab in the open position, a frangible break feature as evidence of opening/tamper, and a raised drinking edge/lip 48.

30 Figure 15 shows a top view 50 of the lid shown in Figures 8 to 14, a bottom view 52, a left view 54, a right view 56, and a front view 58.

The described construction has been advanced merely by way of example and many
35 modifications and variations may be made without departing from the spirit and scope

- 9 -

of the invention, which includes every novel feature and combination of features herein disclosed.

- Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.
- 10 The reference in this specification to any prior publication (or information derived from it), or to any matter which is known, is not, and should not be taken as an acknowledgment or admission or any form of suggestion that that prior publication (or information derived from it) or known matter forms part of the common general knowledge.

- 10 -

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A lid for a sealed container of a food or drink product to facilitate opening of the container for consumption by a consumer directly from the container, wherein
 - the container has a seal; and
 - the lid includes a coupling arranged for holding the lid to the sealed container, and a tab adapted to be pressed toward the container so as to pivot away from a surrounding portion of the lid, wherein the tab includes an abutment which, during pressing of the tab, abuts the seal of the sealed container and presses against the seal so as to initiate mechanical piercing of the seal.
2. A lid as claimed in claim 1, wherein the lid include a frangible holding portion which, in an unused condition, holds the tab relative to the surrounding portion of the lid and which, in a deployed condition, is broken to allow the tab to be pushed below the surrounding portion.
3. A lid as claimed in claim 2, wherein the frangible holding portion is adapted to break visually so as to act as a tamper evident indicator.
4. A lid as claimed in any one of claims 1 to 3, wherein the tab is pivotally movable between the unused and the deployed conditions about a hinge.
5. A lid as claimed in claim 4, wherein the lid is unitary in construction and the hinge is integrally formed in the unitary lid.
6. A lid as claimed in any one of claims 1 to 5, wherein the abutment is configured to concentrate force on a relatively small surface area of the seal.
7. A lid as claimed in claim 6, wherein the abutment is located centrally on an underside of the tab, along a central axis of the tab which central axis is perpendicular to an axis of hinged movement of the tab.
8. A lid as claimed in claim 7, wherein the abutment extends to a distal tip of the tab.

- 11 -

9. A lid as claimed in any one of claims 6 to 8, wherein the abutment includes a downwardly-facing point.
10. A lid as claimed in claim 9, when dependent on claim 4, wherein the abutment is in the form of a longitudinal ridge extending perpendicular to the hinge.
11. A lid as claimed in any one of claims 1 to 10, wherein the lid includes a perimetral lip for sealing against the mouth of a user.
12. A lid as claimed in claim 11, wherein the perimetral lip is in the form of a circular lip having a substantially planar upper edge.
13. A lid as claimed in any one of claims 1 to 12, wherein the seal is in the form of a membrane or film.
14. A lid as claimed in claim 13, wherein the seal is in the form of a foil membrane or a plastic induction-seal membrane.
15. A lid as claimed in any one of claims 1 to 14, wherein the lid includes a locking protrusion which resiliently engages to hold the tab in the deployed condition relative to the surrounding portion of the lid.
16. A lid as claimed in claim 15, wherein the lid includes locking protrusions mounted at opposed sides of the tab.
17. A lid as claimed in any one of claims 1 to 16, wherein the tab has an indentation on an upper surface thereof for receiving a finger or thumb of a user.
18. A lid as claimed in claim 17, when dependent on claim 16, wherein the protrusions are located between the indentation and the hinge.
19. A lid as claimed in any one of claims 1 to 18, wherein the lid includes a well and the tab is located within the well.
20. A lid as claimed in claim 11 or claim 12, wherein the tab is radial and a distal tip of the tab terminates near the perimetral lip.
21. A lid as claimed in any one of claims 1 to 20, wherein the coupling is in the

- 12 -

form of a resiliently deformable flange/shroud adapted to resiliently fit over a rim of the container.

22. A lid as claimed in any one of claims 1 to 21, wherein in the unused condition the tab protrudes above the surrounding portion of the lid.
23. A lid as claimed in claim 22, wherein in the deployed condition the tab is at or below the surrounding portion of the lid.
24. A lid as claimed in claim 15 when dependent on claim 4, wherein the locking protrusion includes an over-centre arrangement across the hinge.
25. A lid as claimed in claim 24, wherein the over-centre arrangement includes a first flap depending from the lid and a second flap depending from the tab, the first flap being arranged to resiliently snap past the second flap as the tab is hingedly moved to the deployed condition.
26. A lid as claimed in claim 25, wherein the first and second flaps are centred along a central axis of the lid, which central axis extends along a centre of the tab and perpendicular to the hinge.
27. A lid for a sealed container substantially as hereinbefore described with reference to the accompanying drawings.

1/15

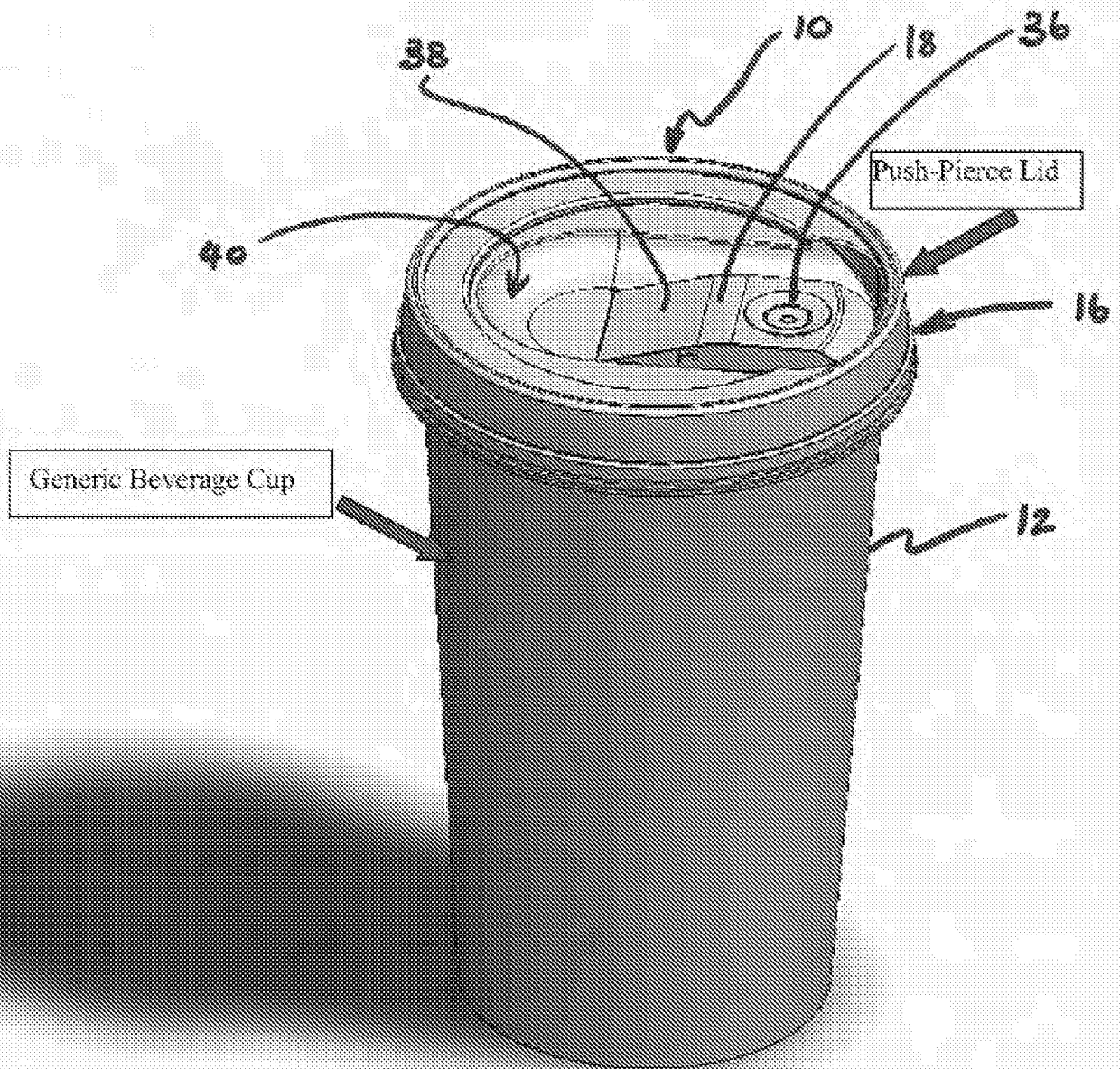


Figure 1

2/15

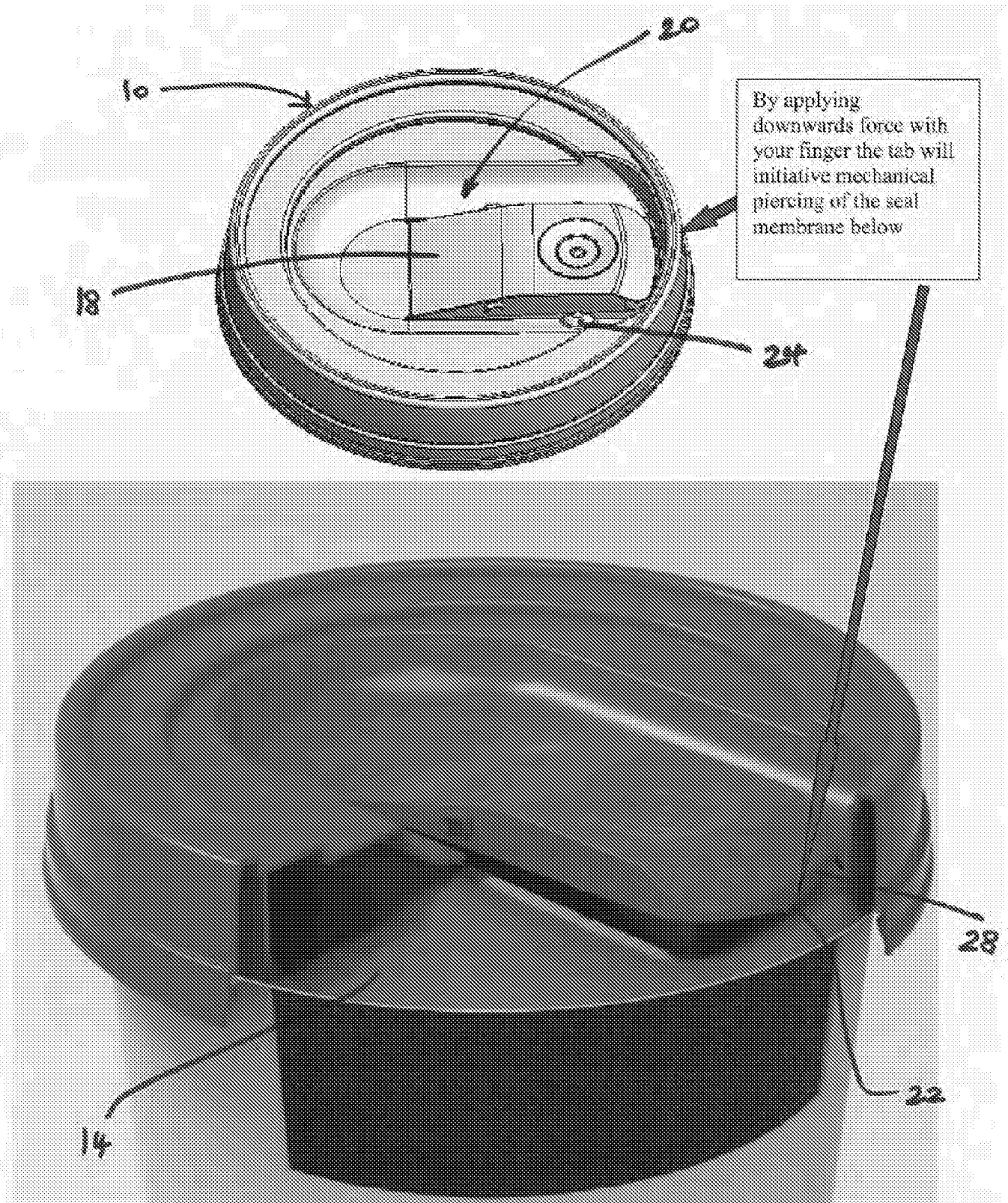


Figure 2

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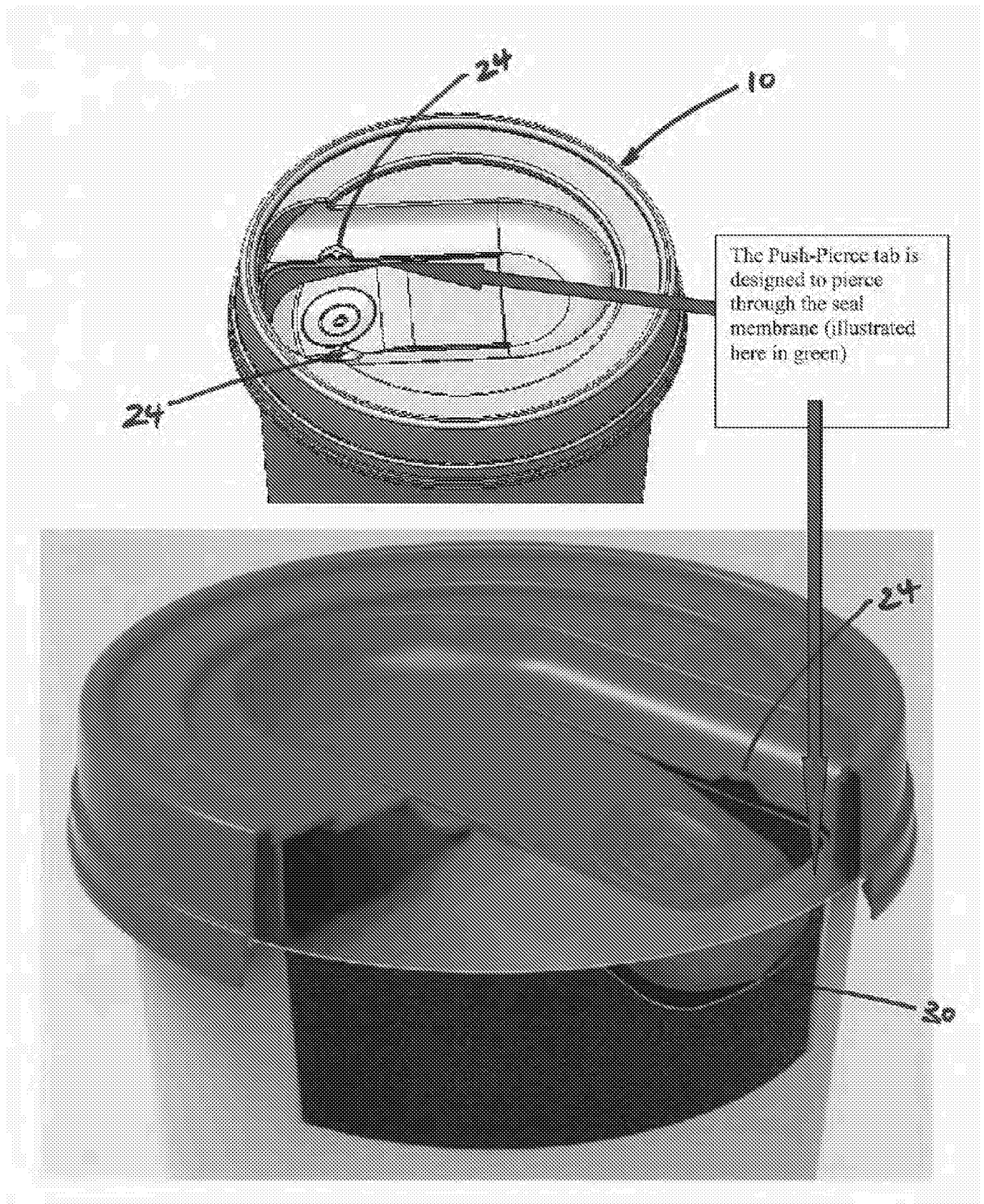


Figure 3

4/15

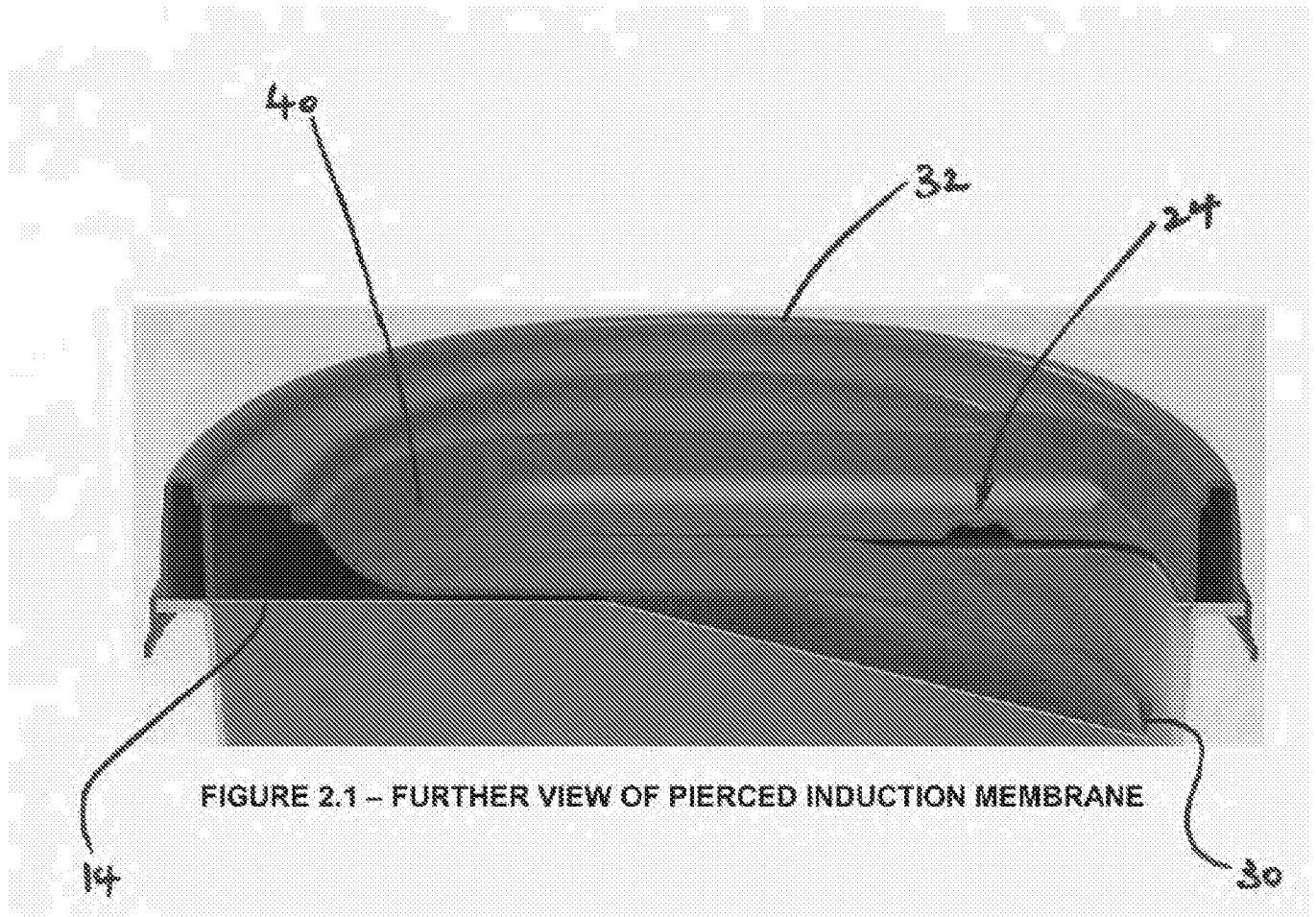
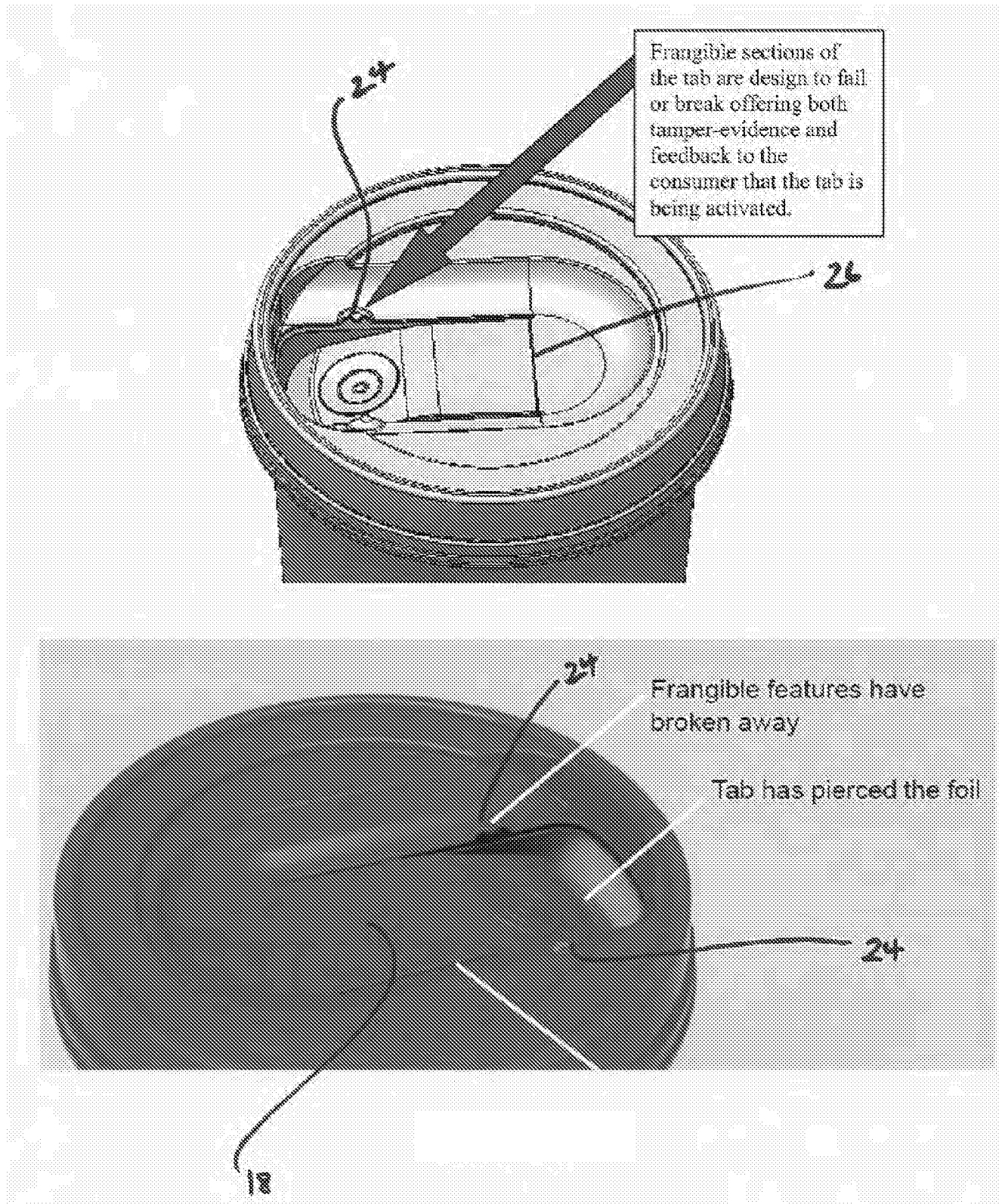
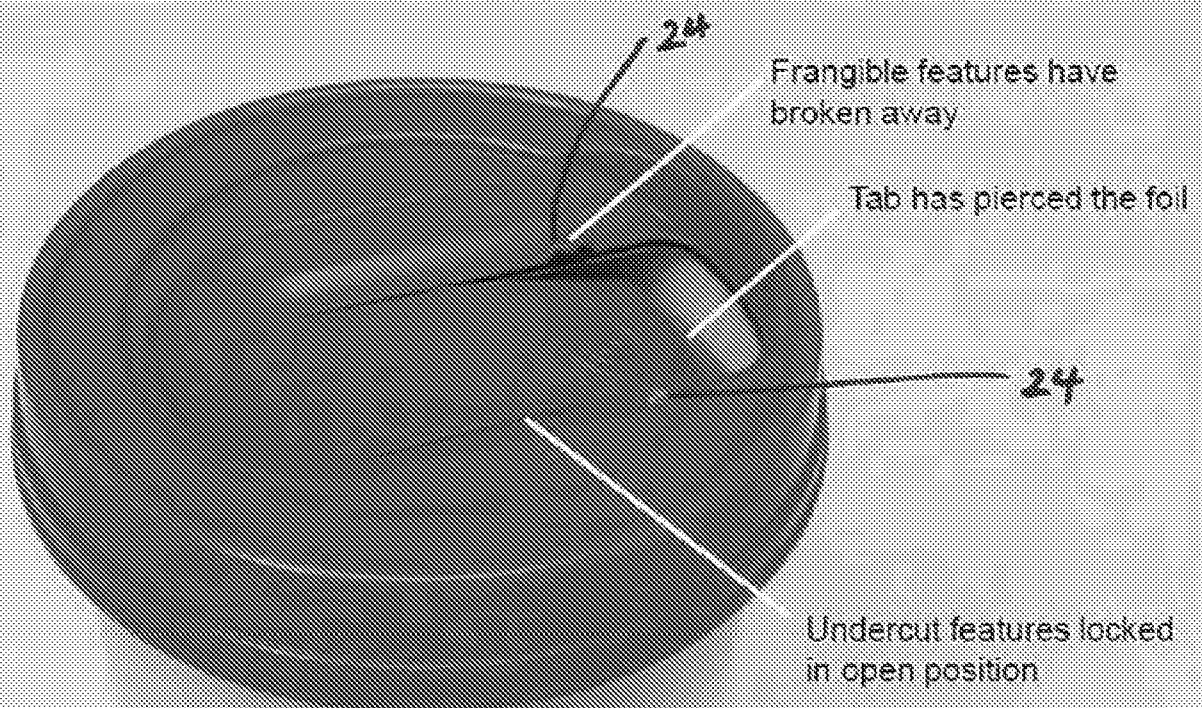
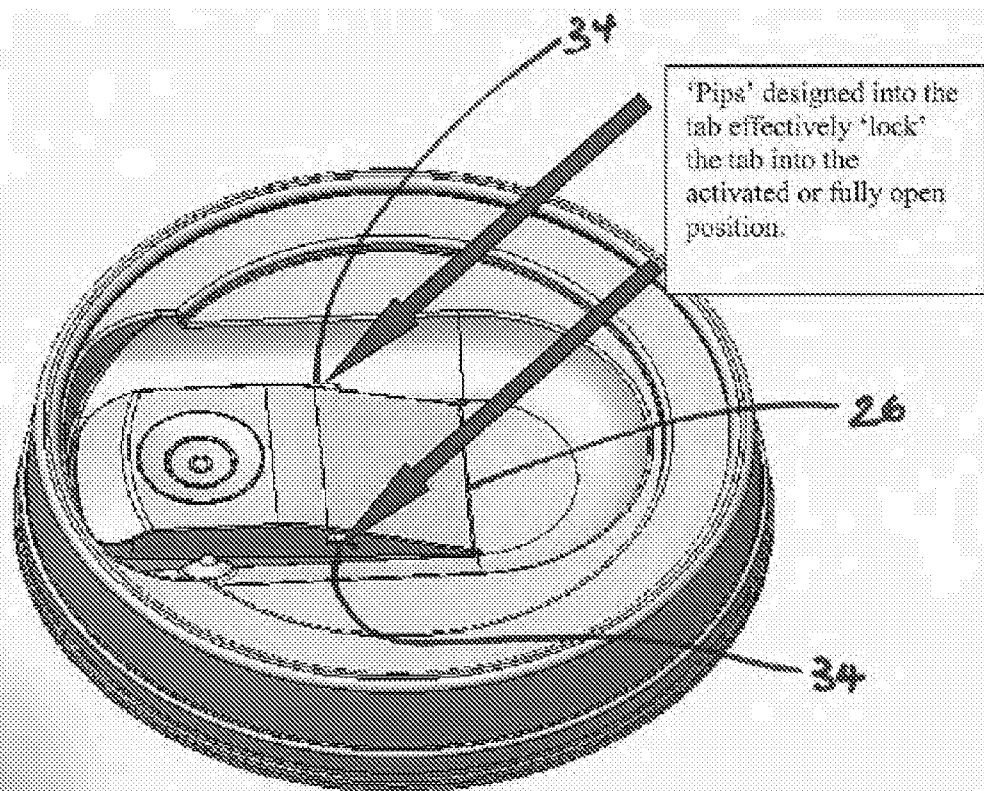


Figure 4

5/15

**Figure 5**

6/15

**Figure 6**

7/15

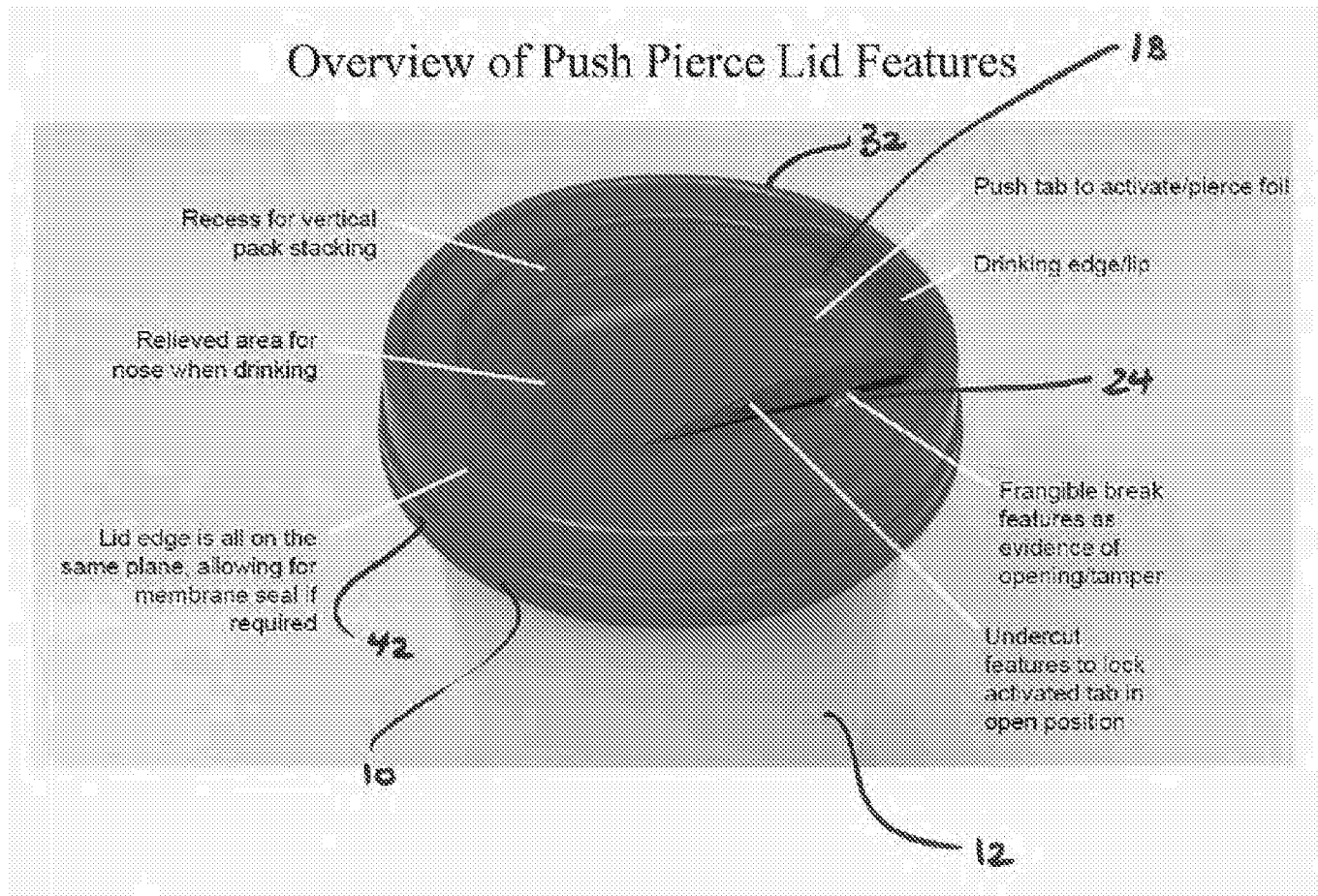


Figure 7

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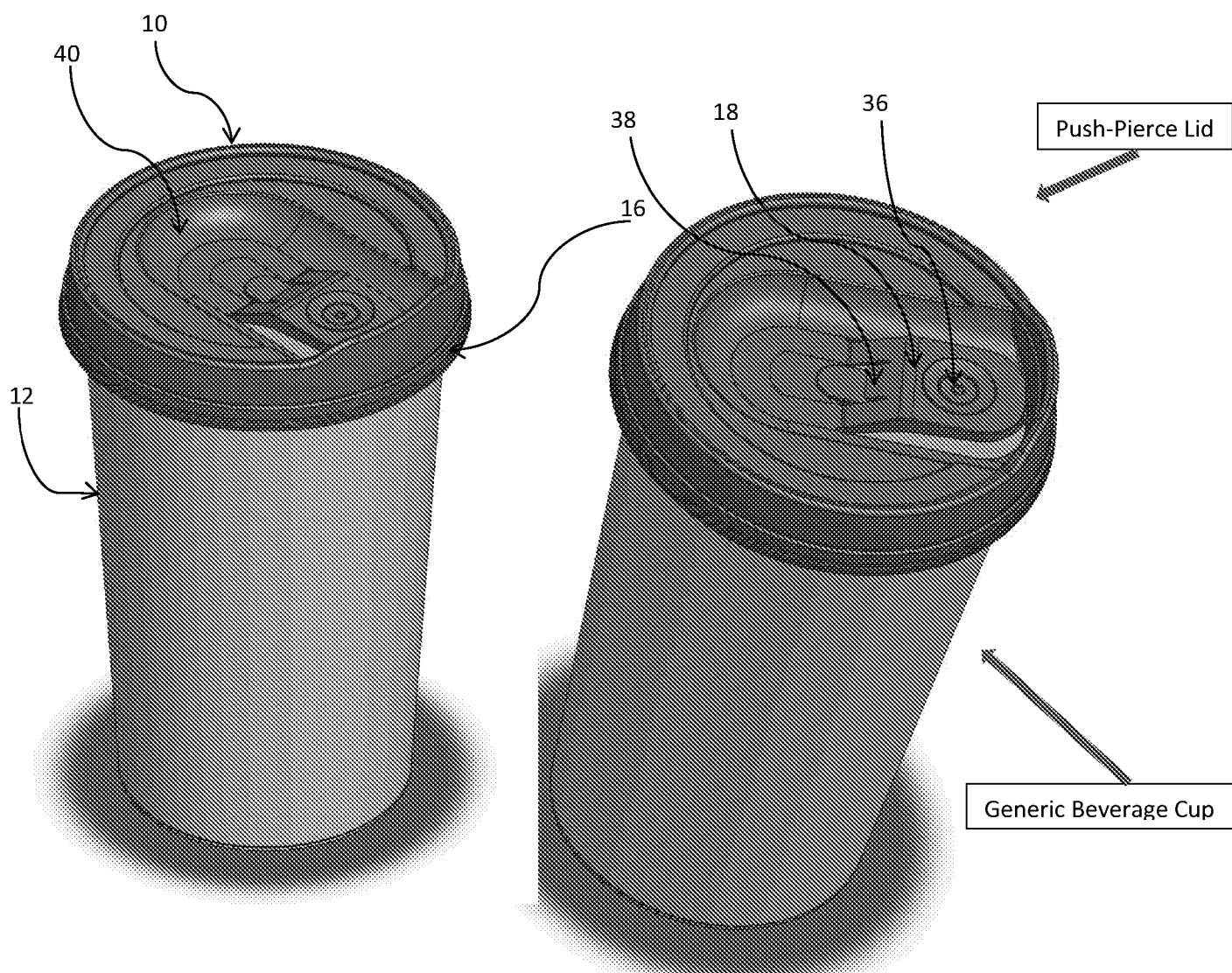
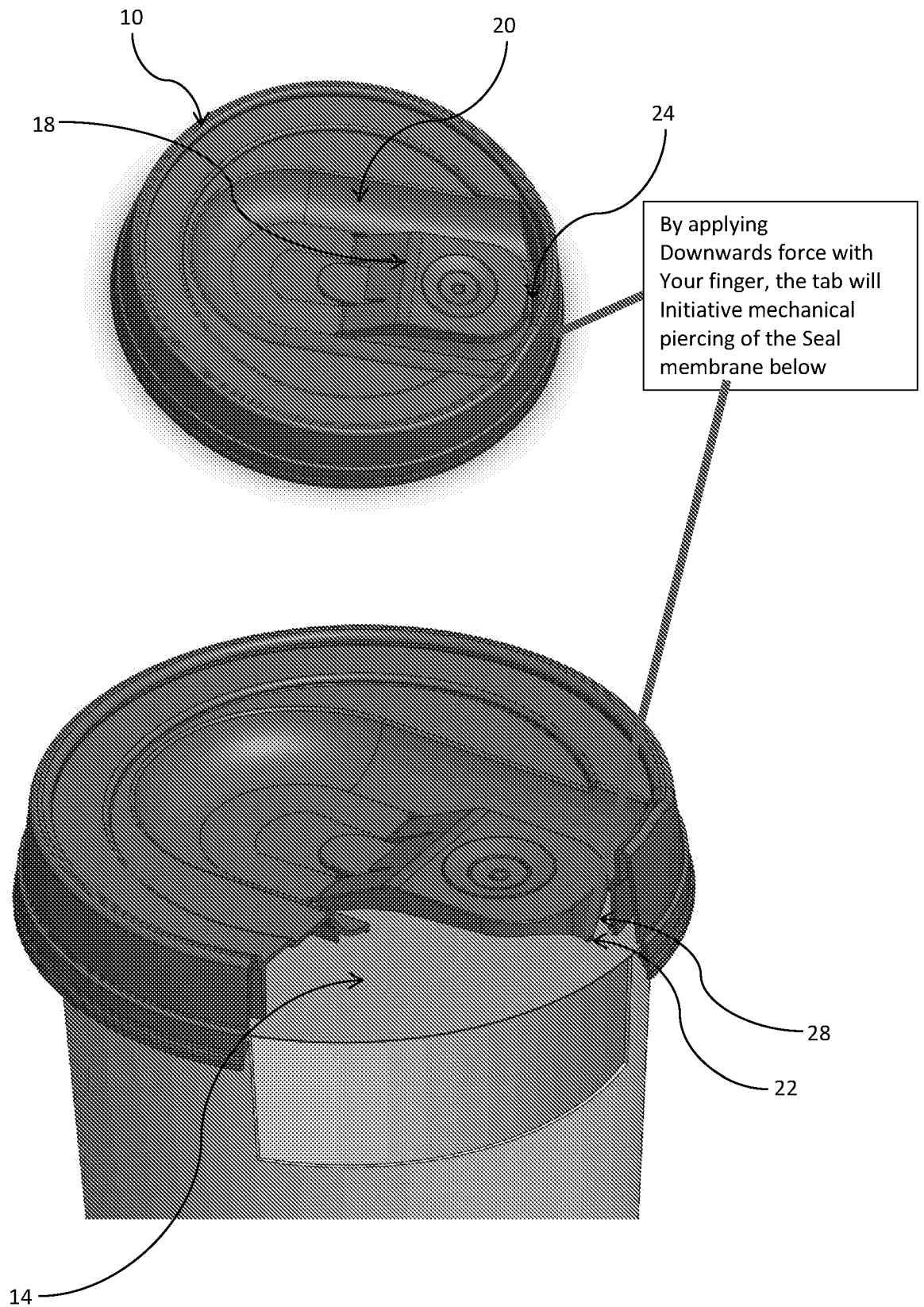
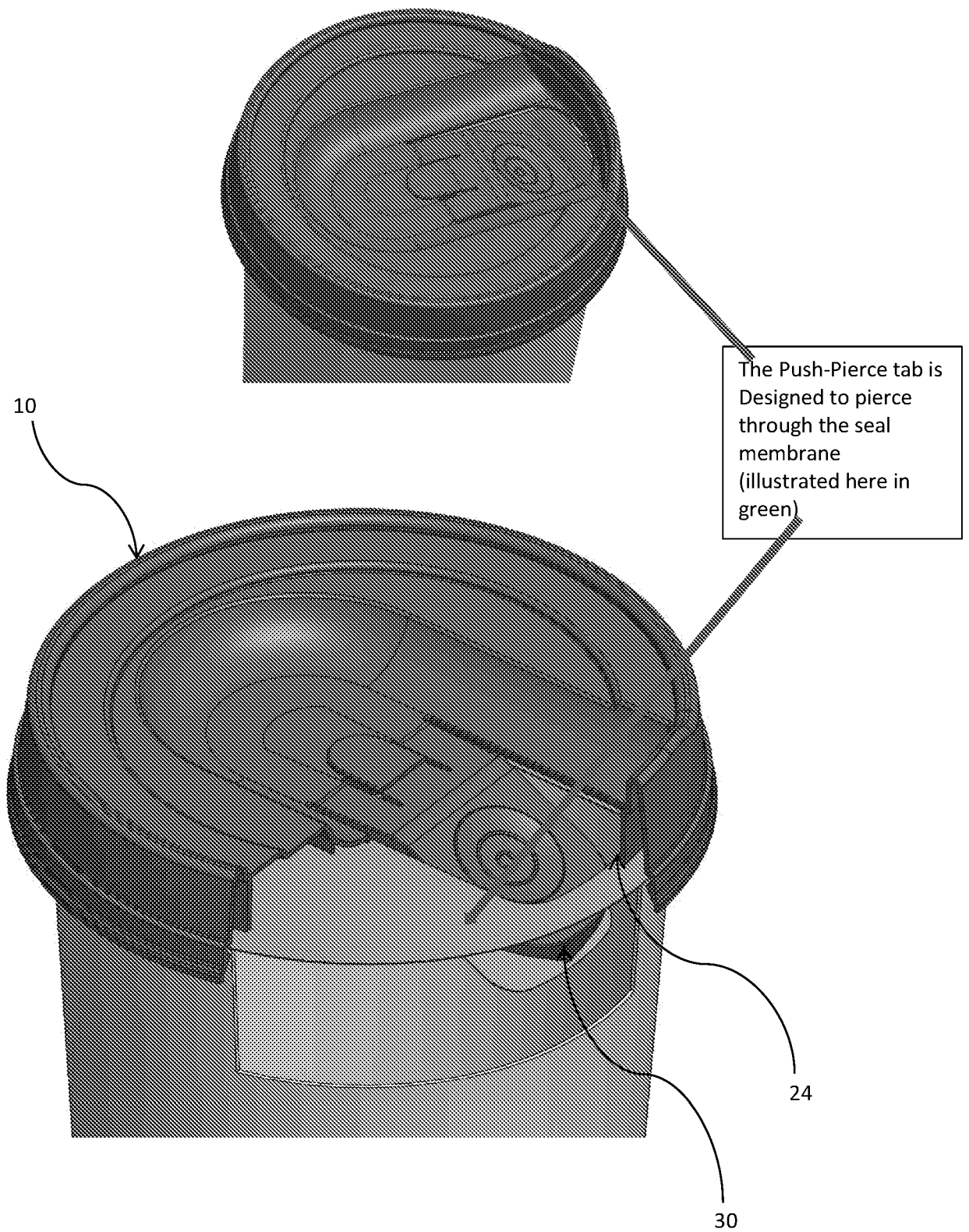


Figure 8

9/15

**Figure 9**

10/15

**Figure 10**

11/15

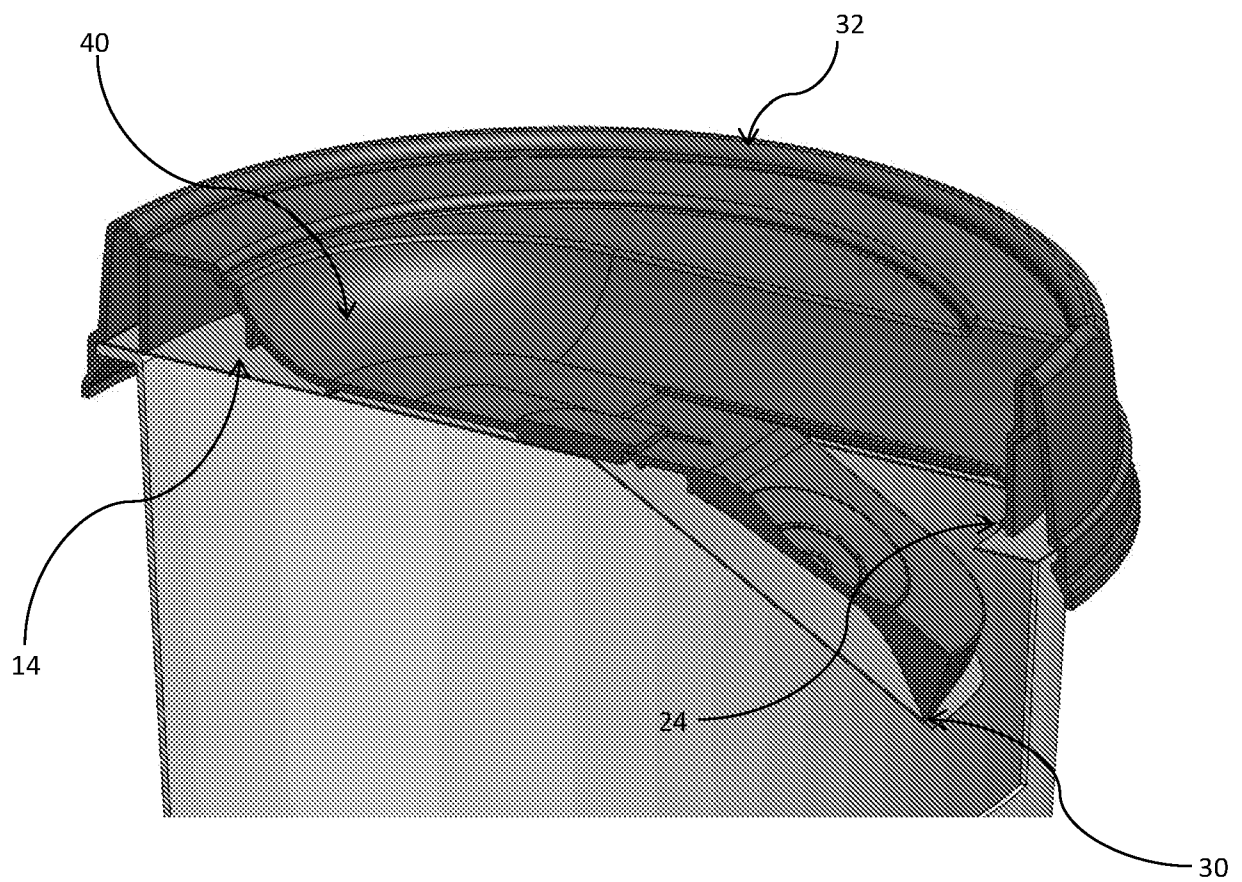


Figure 11

12/15

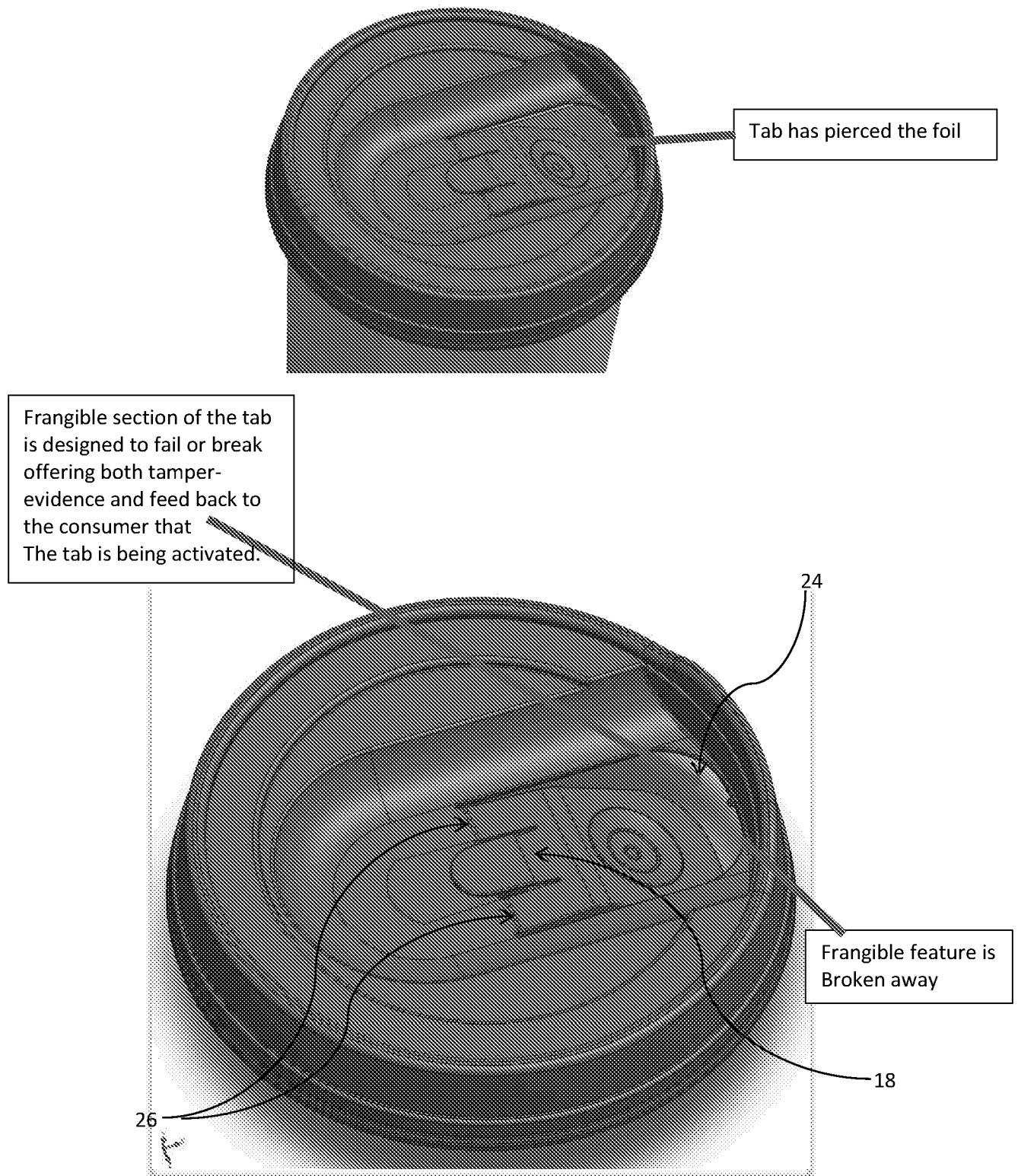
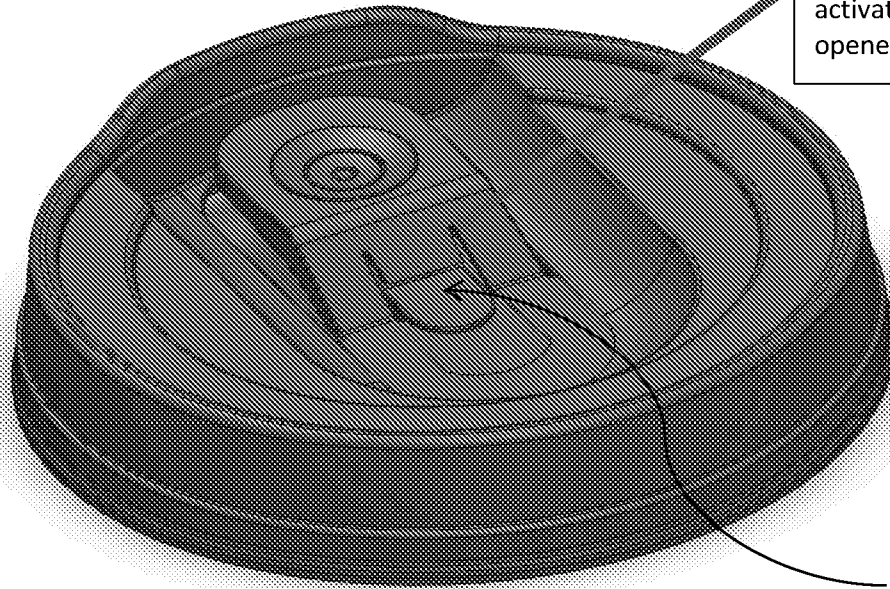


Figure 12

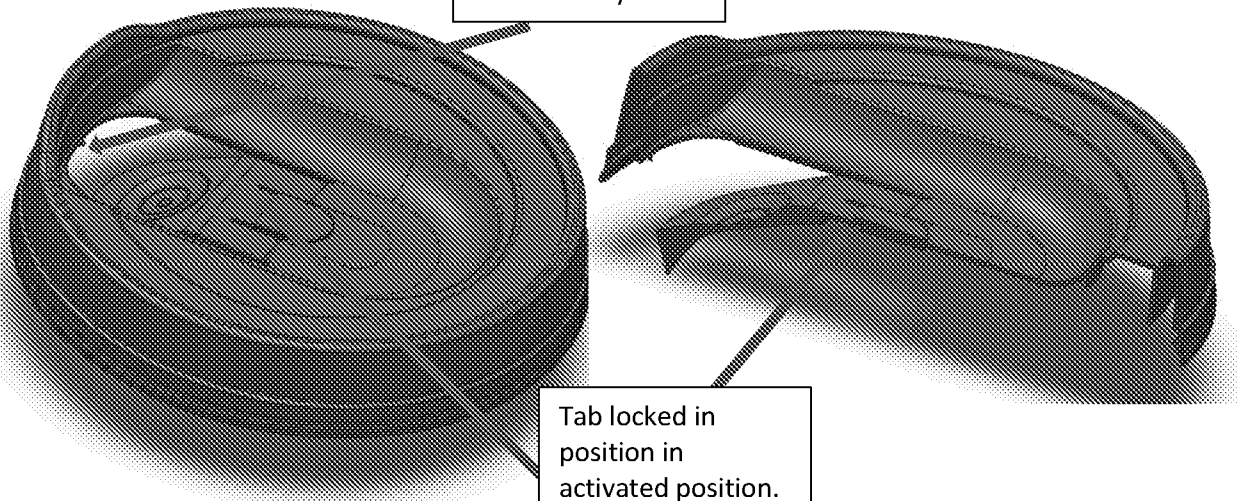
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'Stop' designed to effectively 'lock' the tab in to the activated or fully opened position



34

Frangible feature is Broken away



Tab locked in position in activated position.

Figure 13

14/15

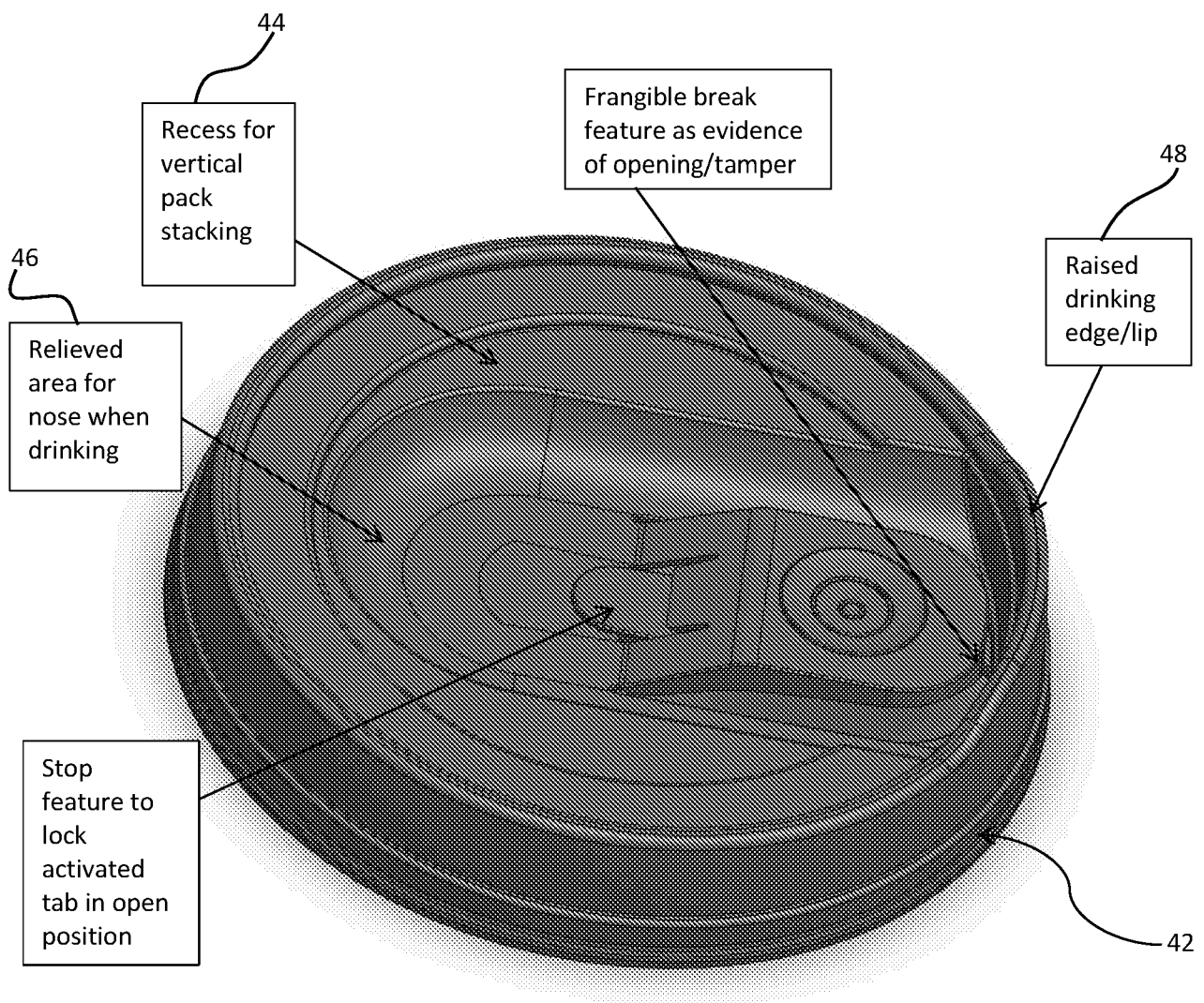


Figure 14

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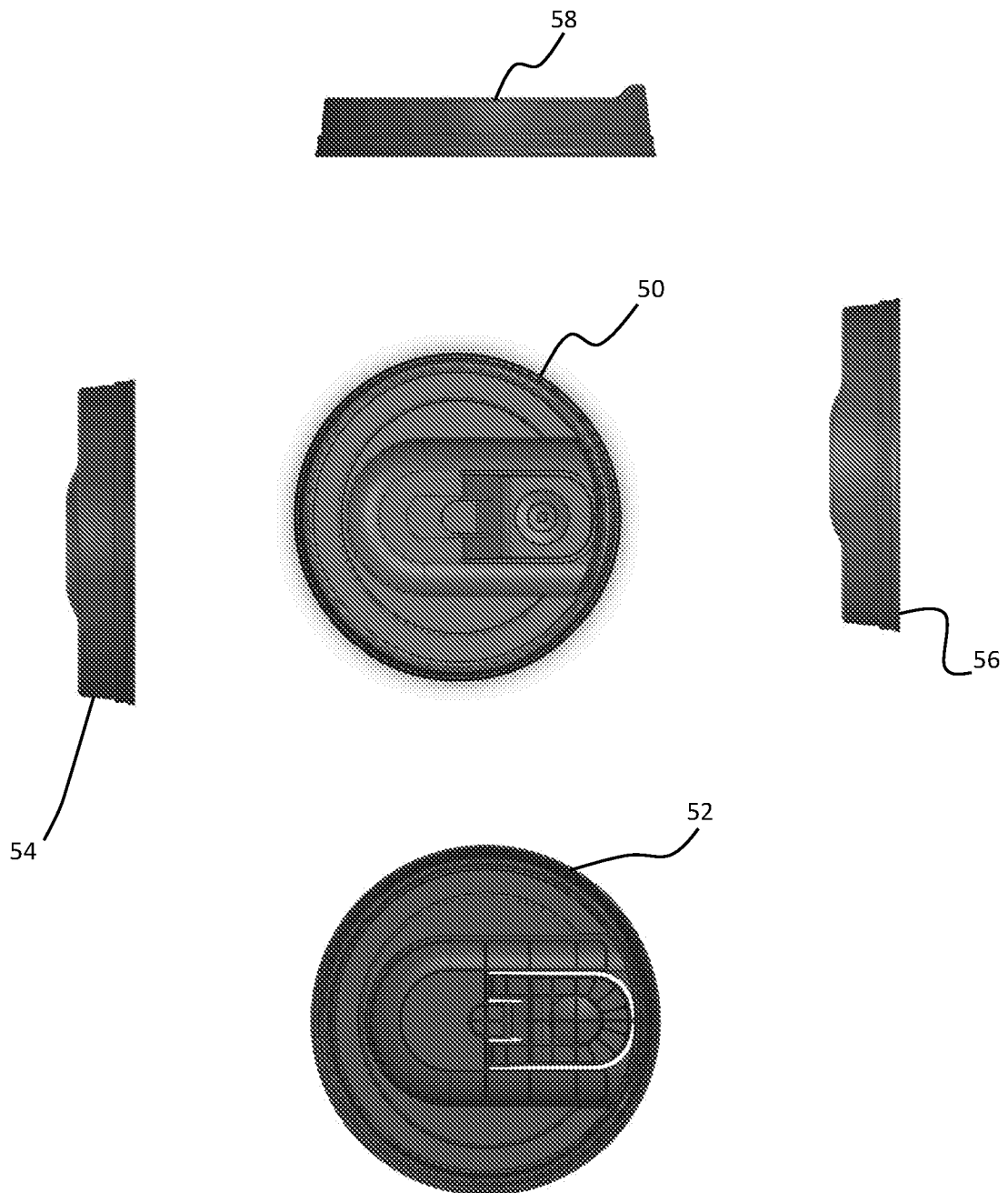


Figure 15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2016/051188

A. CLASSIFICATION OF SUBJECT MATTER

B65D 51/22 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPIAP, EPODOC: IPC/CPCs - B65D51/22, B65D2251/0093, B65D51/2835, B65D51/222, B65D51/20; Keywords: push, press, flab, flange, tab, leaf, punch, lever, arm, pierce, cut, break, tear, lock, retain, hold, stop, over-centre, protrusion, nib, projection, seal, membrane, film, foil and similar terms.

Applicant/Inventor name search carried out in ESPACENET, AUSPAT and internal databases provided by IP Australia.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Further documents are listed in the continuation of Box C



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"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 7 February 2017	Date of mailing of the international search report 07 February 2017
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA Email address: pct@ipaustalia.gov.au	Authorised officer Tom Banks AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. 0262832742

INTERNATIONAL SEARCH REPORT		International application No.
C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		PCT/AU2016/051188
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2006-341919 A (SHIKOKU KAKOKI CO LTD) 21 December 2006, English translation obtained from Espacenet Figs 1, 5-10; paras 0013-0015, 0017, 0019.	1-26
X	WO 2007/137721 A1 (GRUP VEMSA 1857 S.L.) 06 December 2007 Figs 1, 3-7, 14-16; page 6, lines 17-21 and 30-33, page 7 lines 11-16 and 21-22, page 8, lines 7-14.	1-26
X	EP 2295338 A1 (HUNG) 16 March 2011 Figs 1, 3, 7, 9-13; para 0010-0012, 0015	1-26
X	JP 2007-314237 A (YOSHINO KOGYOSHO CO LTD) 06 December 2007, English translation obtained from Espacenet All figures, para 0012, 0015, 0021	1-6, 9, 11-13, 15, 19-26
A	US 5894950 A (KICK) 20 April 1999 Col 5, lines 23-51 and Figs 2 and 4-7	24-26

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
the subject matter listed in Rule 39 on which, under Article 17(2)(a)(i), an international search is not required to be carried out, including
2. ☒ Claims Nos.: **27**
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
See Supplemental Box
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

Supplemental Box**Continuation of Box II**

Claim 27 does not comply with Rule 6.2(a) because it relies on references to the description and/or drawings.

INTERNATIONAL SEARCH REPORT		International application No.	
Information on patent family members		PCT/AU2016/051188	
This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.			
Patent Document/s Cited in Search Report		Patent Family Member/s	
Publication Number	Publication Date	Publication Number	Publication Date
JP 2006-341919 A	21 December 2006	JP 2006341919 A	21 Dec 2006
		JP 4778734 B2	21 Sep 2011
		CN 101193804 A	04 Jun 2008
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		KR 20080031724 A	10 Apr 2008
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		TW I361786 B	11 Apr 2012
		WO 2006132117 A1	14 Dec 2006
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		ES 2273607 A1	01 May 2007
		ES 2273607 B1	16 Feb 2008
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		KR 101233020 B1	13 Feb 2013
		US 2011062158 A1	17 Mar 2011
JP 2007-314237 A	06 December 2007	JP 2007314237 A	06 Dec 2007
		JP 4916772 B2	18 Apr 2012
US 5894950 A	20 April 1999	US 5894950 A	20 Apr 1999
End of Annex			